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Disposing of Scrap Systematically

The Crompton & Knowles Loom Works
Makes Discarded Material Over Into Other
Useful Articles—Scrap Committee Formed

BY GERARD FRAZAR

SELLING waste material as such only when it cannot be made over into another useful article is the recent policy of the Crompton & Knowles Loom Works, Worcester, Mass., which has created a department especially for the economical disposal of waste.

In 1917 this company established within its organization a scrap committee for the purpose of devising means of utilizing to better advantage large quantities of steel and wood scrap accumulating from time to time. Since the committee's inception it has become an important adjunct to the organization as a whole, its field of activity having been materially widened to include anything that can be classified as scrap.

The committee is composed of a representative body of departmental foremen and executives, who are in

comes under the jurisdiction of this committee, as well. The chairman of the committee is a member of the purchasing department, who is in a position to determine the relative value of articles recommended to be manufactured from scrap material, compared with prevailing market prices.

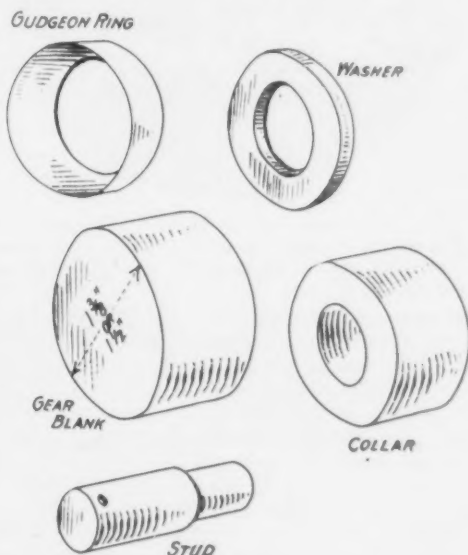
The committee meets the first of each month and the chairman calls on each member separately concerning scrap produced during the previous month for which he is responsible. A report is then submitted as to the quality of the scrap on hand according to classification. Each class is then considered separately to determine whether or not the salvaging of the respective articles would be advantageous, and at the same time the chairman ascertains the relative value of the material under discussion so that the committee may decide intelligently as to final disposition.

The object in view at all times is to consider the salvaging of all such materials that can be fabricated further and used as a part toward construction of looms or otherwise. During 1920 when materials, especially iron and steel, were costly and difficult to obtain, many hundred dollars' worth of scrap material was salvaged. In addition, greater care in working up material developed throughout the various departments in this large plant, thus resulting in an additional saving.

Salvaged material is properly cared for in stockrooms, where men in charge are familiar with department raw material requirements. When requisition is made at the stockroom for material it is the duty of the one in charge there to apply salvaged material whenever possible. The labor charge of working up salvaged material naturally is larger than it would be otherwise, but not sufficiently so to more than offset the saving in raw material costs. Workmen much prefer not to handle salvaged material, consequently there is the tendency to eliminate it as much as possible.

In the company's foundry a Make-Every-Ton-Count-Committee is incorporated to work in conjunction with the main plant reclaim committee. Its purpose is to make every piece of casting from a mold count for something. The day of workmen carelessly throwing castings against other hard substances, and large percentages of breakage, has passed. The welding department is materially reduced as a result. Not only is breakage much smaller, but better castings have resulted, thereby increasing the efficiency of the foundry organization.

Ways of disposing scrap materials are varied. It is not always possible to net the company a profit, especially on falling markets, but instances cited here illustrate the resourcefulness of committee members in the early part of last year. Previously, wood scrap was sold to employees at a nominal price representing a loss to the company, or was consumed in the boiler department. The committee classified the scrap, selling four cars of ash butts at 4c. per ft., netting a profit,



Gudgeon Rings Were Produced from Short Pieces of Scrap Pipe. Though not so shown in the sketch, one end of the ring is a very thin edge, while the other end is about $\frac{1}{4}$ in. thick. Washers were made from rusted flat steel scrap. Gear blanks, collars and studs were made from short pieces of cold-drawn steel.

direct contact with such materials that are used in loom construction from which there results a certain percentage of scrap. Each member has a certain class of material to cover. The principal items are wood, cold-drawn steel, hot-rolled steel and iron, tool steel, pipe and miscellaneous items such as sandpaper, glass rods, solder, etc. The activities of the committee are not limited to material alone, however, for obsolete machine tools, motor trucks, and, in fact, anything becoming inefficient that is owned by the corporation

and apple wood butts to manufacturers of handles. Such accumulations of wood pieces that cannot be further used are sold to employees during the summer months at a small price which barely covers the cost of handling.

The committee is at present considering whether or not it would be profitable to invest in a machine for separating shavings from sawdust, there being a ready market for the latter. Worn out sandpaper rolls yield 4-in. to 6-in. strips, which are cut into convenient pieces for general hand purposes. Short pieces of glass rods are sometimes used to advantage in the production of Jacquards, while scrap paper is sold at prevailing market prices. Solder, accumulating in the emery wheel department, is reclaimed and used in babbitting boxes and in lead hammers. All used files are sent away and recut at a cost of less than 15c. each. Last year the company saved about 25 per cent in its file purchases by using recut files, and, in addition, disposed at a good price of recut stock after worn out.

At one time there was an accumulation of several thousand pounds of rusted flat steel scrap on hand. From this a supply of washers was obtained at comparatively little expense and at a period when deliveries of washers were uncertain. Obsolete sizes of high-speed tool steel and of high-speed steel drills and reamers have been converted into usable sizes, 1 in. to 1½ in. Short pieces of cold drawn steel, nothing less than 14 in., are stored in separate racks according to size. When possible, they are used in the production of studs and collars. Pieces 1½ in. and 1 15/16 in. in diameter sometimes are used in making upright shafts, and pieces 1¾ in. in diameter welded and used for bottom shafts. Short pieces 1¾ in., 1 3/16 in. and 1½ in. in diameter commonly are utilized in making gear blanks and collars, while pieces 1 15/16 in. in diameter have been welded and used for girts for worsted looms.

The company annually consumes a considerable tonnage of pipe. Its disposition of smaller sized scrap pipe offers an illustration of the thoroughness of the committee's methods. It decided gudgeon rings could be produced from 1¾-in. and 2-in. short pieces in place of malleable iron rings, when conditions warrant, to considerable advantage. In 1920 there resulted a saving of 1.31c. each and 3.08c. each on the No. 37 and No. 47 rings, respectively, in that these were produced from short pieces of pipe, as against the purchase price of malleable iron rings.

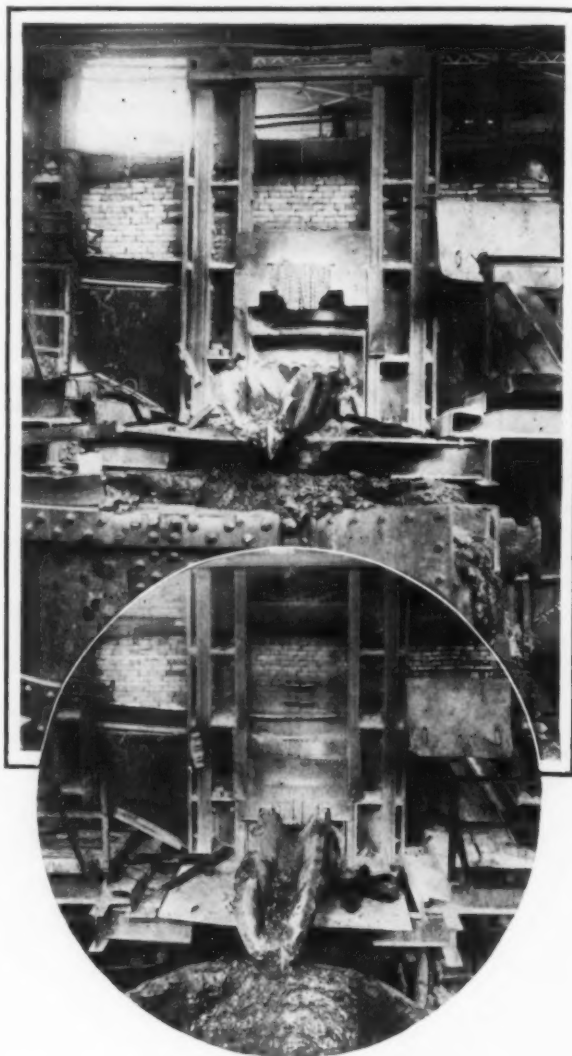
Salvaged pieces of 2-in. channel iron are used for reinforcing and repairing transportation platforms for shipment of looms. Interesting problems come up before the committee, which are outside its jurisdiction, and assigned to proper plant executives or committees.

It should not be construed that the reclaim committee permits indiscriminate working up of salvaged material to the detriment of manufacturing costs. As a matter of fact working up costs, as related to raw material and scrap material prices, constantly are compared by members of this committee with a view to determining the most advantageous manner of disposing of property. If, for instance, the market for gear blanks is such that it is cheaper in the end for the company to buy from outside interests rather than work up salvaged cold drawn steel stock, scrap material is sold at going prices. Care also is taken not to overstock on products derived from salvaged material. Whether the committee can save money for the company this year is problematical, due to liquidation of raw material markets in general. It nevertheless is serving its purpose, for ways and means are being constantly studied and put into practice whereby waste is eliminated as much as possible, which, of course, means a saving to the Crompton & Knowles Loom Works.

American Consul W. Duval Brown reports from La Paz, Bolivia, that an American concern has recently purchased tin ore lands in Bolivia valued at about \$2,000,000. He states that the output of this property is not large and that it has little effect on the total Bolivian output.

Kinney Tapping-Hole Shield

A tapping hole shield, consisting of a steel plate with a fringe of chains, has been developed by Charles L. Kinney, Jr., superintendent of the open-hearth department, Illinois Steel Co., South Chicago, Ill., for



In the Upper Photograph the Shield, Consisting of Plate and Chains, Is Raised. Below, It Is in Position Ready for Tapping

use on open-hearth furnaces, blast furnaces and at the capping and uncapping platforms in Bessemer plants. The company has found such a shield effective for preventing burns from molten metal.

The shield is attached to the open-hearth furnace by angle irons bolted to a buckstay on each side of the furnace spout and is operated by pulleys and weights. The fringe, or guard of short chains in the center, is made of ¾-in. links to fit the tapping hole.

According to Robert J. Young, manager department of safety and relief, Illinois Steel Co., this shield was developed in 1917. The shield formerly used was known as the Conway shield, which covered the tapping hole only partly. After a second helper at No. 1 open-hearth was burned in a break-out of the heat, Mr. Kinney evolved the protector described. Experience with this shield has demonstrated that even though a heat does break out while the hole is being opened, the workman is protected by the Kinney shield.

Dam Contracts Awarded

BIRMINGHAM, ALA., July 18.—The Alabama Power Co. has let company railroad and other contracts for building the \$8,000,000 Mitchell power dam on the Coosa river and work has begun. The dam is to be completed in two years. It will have initial installation of 60,000 hp. with eventual of 120,000.

Explosion Hazard and Its Prevention

Analysis of Characteristics of Fuels and Other Combustible Materials, with Special Reference to Powdered Coal Installations—Explosive Mixtures and How They Are Formed

BY JOSEPH F. SHADGEN*

EXPLOSION hazards in all industries treating purposely with dust of all nature, or dealing incidentally with it, have recently received special attention through the joint efforts of the United States Department of Agriculture and the Bureau of Mines. An educational campaign familiarizing manufacturers with the dangers due to the possibilities of explosion caused by dust has been carried on. It has been pointed out that fire hazards are distinctly different from explosion hazards, and that the same precautions do not guard against both calamities. This seems contradictory, but the facts are undeniable.

Last December the Industrial Commission of Ohio called to Columbus several powdered coal equipment manufacturers, and some users of that method of burning coal, to discuss the explosion hazards in connection with pulverized coal. Several accidents had occurred in that State and the authorities sought a multitude of opinions, dealing with the problem from all stand-

points, before making preventive recommendations to the legislature. In conjunction with that meeting the writer made a short investigation of the subject for a New York concern.

Complete absence of comprehensive literature explaining the problem involved, or dealing with the subject from the safety standpoint, are the reasons for this independent study. A mass of material is loosely spread in different publications of all nations, as explosion problems have been investigated for a number of years in conjunction with military objects, and for safety purposes in mining. The classic studies of Mallard and LeChatelier on the danger of "fire damp" are known to the whole technical world. The object of this essay is to co-ordinate in comprehensive form the knowledge gleaned from various sources.

That a theoretical study of the problem is necessary will hardly be denied by anybody, in spite of the sarcastic sneers of some hard-headed business men, who always point out the difference between theory and practical experience. Only exact and full knowledge can father remedies of real value, as compared with the hit-and-miss precautions due to slow practical evolution. There is no difference between real science and practical facts. It is the half-knowledge that is too often misleading.

Explosions—Fires—Oxidation Reactions

All explosions, as well as fires, are in last analysis the result of an oxidation, meaning the chemical combination of a material with the oxygen of the air. Hence the study of those chemical reactions forms the foundation of all research.

All chemical reactions are due to affinity of one material for another, and the release of this energy always produces either an absorption or a generation

of heat, another form of energy. If heat is generated the reaction is called exothermic, while endothermic reactions are those which absorb heat. It must be emphasized that the heat phenomena are only the effect, not the cause of the reactions.

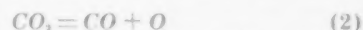
Most oxidation reactions are exothermic; in other words, they produce a surplus of heat, specific to each case. Table 1 is a compilation of the results of oxidation of various material, as found experimentally by investigators.

Reversibility of Reactions

As a typical example of an oxidation, let us take



oxide of carbon in presence of oxygen producing carbonic acid. It is well known that the result of that reaction can be destroyed either by dissociation, caused by a considerable increase in temperature, as expressed by



or by the influence of a third body, whose presence disturbs the balance (catalytic action) also expressed by



or by the interference of a third body producing a new reaction called reduction

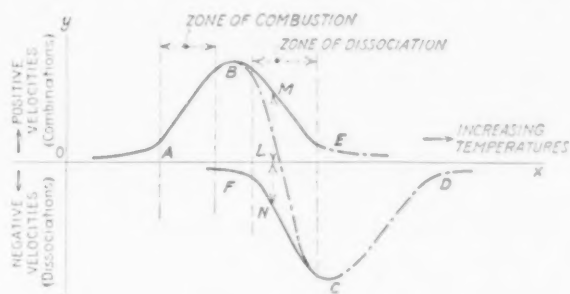
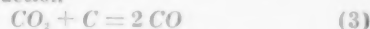


Fig. 1. Variations in Velocities of Reactions

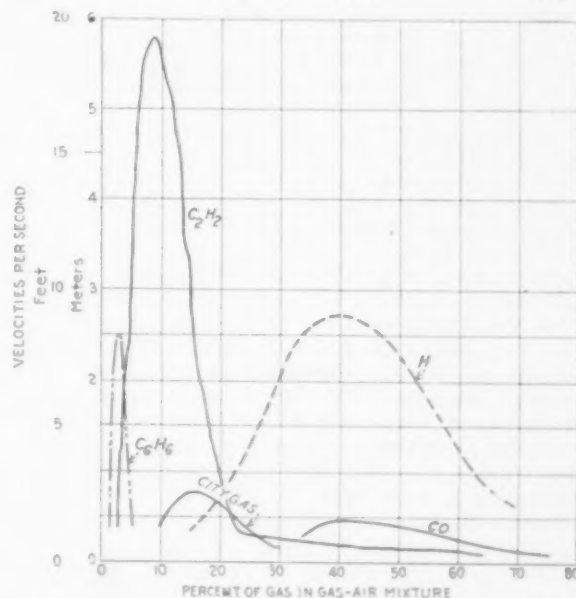


Fig. 2. Relative Inflammability of Certain Air-Gas Mixtures, Showing Upper and Lower Limits of Percentages at Which the Gases Are Actively Combustible

This seems to prove that it is more accurate to write



meaning that most of the chemical reactions are reversible and that the direction depends entirely upon the conditions under which the reaction takes place.

Intensity of Reactions

It follows that, if outside factors govern the direction of most of the reactions, either positive one way or negative the other way, these same conditions will influence their intensities. If a certain number of molecules of CO are in presence of O, they may combine one at a time, ten at a time, one hundred at a time or all at a time. In other words, the velocity of reaction, representing the ratio of the number of molecular reactions actually taking place per unit of

*Consulting engineer, New York.

time to the number of molecular reactions possible, may be great or small, depending on favorable conditions or retarding circumstances. This velocity of reaction expresses the speed at which the phenomena take place and is of the greatest importance in all practical applications.

The temperature, reflecting the heat concentration

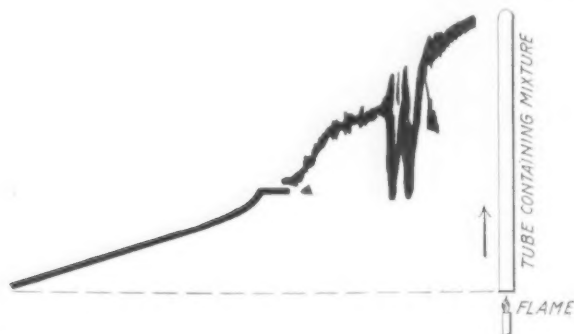


Fig. 3. Schematic Representation of Vibrating Character of Flame Propagation

of the reacting materials, influences most of the velocities of the chemical changes. An increase in temperature usually accelerates the speeds at which the oxidations occur, and a decrease of temperature reduces those velocities. This well known and accepted fact led to the theory of the absolute zero temperature (-273 deg. C. or -459 deg. Fahr) where all reaction-velocities are nil, where absolute lethargy exists and no combinations of any nature are possible.

In all exothermic reactions the temperature is increased, as the heat generated is usually superior to the loss by transmission to the neighborhood; this causes the speed to reach a point where the intensity of the reaction becomes violent and visible, and all combustion phenomena of industrial value are quick oxidations of fuels, accompanied by the production of light and fire.

Similarly it is found that endothermic reactions do require certain temperatures which, if reduced, slow down the phenomena and often cause its freezing up.

These variations of the velocities of reaction are often graphically represented as in Fig. 1. Suppose *OX* the line of increasing temperatures, *OY* the line of positive velocities and *OZ* the line of negative velocities, and consider the case of the exothermic reaction (1). With increasing temperature the velocity rises gradually but slowly along *OA*. From *A* the velocity increased rapidly along *AB*, and that zone, of great industrial importance is called "zone of combustion," in the case of a fuel. If the temperature continues to rise, the speed drops along *BE*, while the opposite reaction according to formula (2) starts with increasing intensity, as indicated by *FC*. That belt is called "dissociation zone," where variable proportions of *CO*

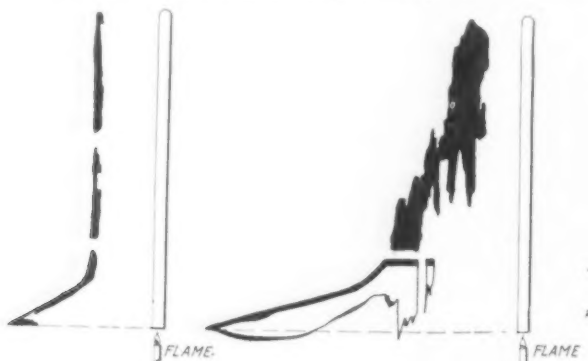


Fig. 4 and Fig. 5. Typical Examples of Sudden, Explosive Combustions

and CO_2 mixed are in equilibrium, according to the temperature level. The reaction (2) reaches its maximum intensity at *C*; after that temperature the velocities diminish gradually, as graphically expressed in the curve *CD*.

Study of this example brought out the existence of a certain temperature (point *A*, Fig. 1), called temperature of reaction, that marks a noticeable increase in the intensity at which the combination takes place. For fuels this is usually called temperature of ignition, and corresponds to the lowest temperature assuring the continued combustion of the fuel. At the temperature of ignition the oxidation of a few molecules generates enough heat to maintain the heat level high enough to guarantee the continuity of the reaction at high speed. For a large number of materials this temperature has been determined experimentally under various test conditions, using different principles, of which Table 2 gives incomplete compilation. Besides the temperature, the speed of reaction of many materials is influenced by the pressure and the presence of foreign materials such as platinum, or large cooling surface, etc., that may accelerate or retard the intensity, according to circumstances.

It follows (1) that oxidation of a material can take various forms, involving the time factor, and the difference between combustion or fire and an explosion is merely a matter of seconds or fractions of a second; (2) that explosions are not only not limited to fuels in the industrial sense, but that under certain circumstances the hazard exists with all materials liable to oxidation.

Close Contacts for Intense Reactions

All chemical affinities are active only at close distances. It is well known that gases react more quickly

TABLE 1
Heat Generated by Oxidation Reactions

Material	Symbol	Combinations with Oxygen	Kg. Cal. per Mol. Gram	Kg. Cal. per Kg. Material	Kg. Cal. per Kg. Oxygen
Aluminum	Al	Al_2O_3	380.2	7,014.7	7,920
Phosphorus	P	P_2O_5	370	6,014	4,624
Ethylene	C_2H_4	$2CO_2 + 2H_2O$	333.3	11,904	3,472
Acetylene	C_2H_2	$2CO_2 + H_2O$	310	11,923	3,875
Methane	CH_4	$CO_2 + 2H_2O$	211.9	13,243	3,311
Silicon	Si	SiO_2	184.5	6,496	5,766
Magnesium	Mg	MgO	143.3	5,970.8	8,956
Potassium	K	K_2O	97.1	1,240	6,069
Carbon	C	CO_2	96.96	8,080	3,030
Sodium	Na	Na_2O	91	1,978	5,687
Zinc	Zn	ZnO	85	1,307	5,312
Iron	Fe	FeO	75.7	1,350	4,725
Sulphur	S	SO_2	71.1	2,222	2,222
Oxide of Carbon	CO	CO_2	67.96	2,427	4,228
Tin	Sn	SnO	67	568	4,225
Hydrogen	H	H_2O	58.1	29,050	3,630
Copper	Cu	CuO	37.2	585	2,325

than liquids, and that liquid solutions combine more easily than solid materials. This is because the intensity of the reaction is a matter of close contact; each molecule has to find its mate without physical difficulties. As the molecules of gases mix by diffusion, and present an enormous surface of contact, their reaction possibilities are the least interfered with by the material form.

That is why combinations of gases are controlled with great ease, why the laws governing reactions are studied on typical gaseous mixtures, and why for many industrial purposes solids and liquids are transformed into quasi-gaseous material by vaporization and pulverization to obtain better and quicker results. This is particularly true for oxidation reactions, because in most applications the oxygen is supplied by the air, its most economical form.

The second part of the study is therefore clearly defined and reduced to the analysis of how mixtures of air and materials liable to oxidation behave under conditions practically possible. These mixtures may be gas and air, such as hydrogen, methane, oxide of carbon, coke oven gas or producer gas and air; liquids and air, such as alcohol vapors, gasoline evaporates, sprayed oil or atomized kerosene and air; solids and air, such as finely pulverized coal; sawdust; flour meal or metal flakes floating in the air. These are only a few practical examples of the same principle. An individual study will bring out the specific peculiarities of each class.

All mixtures are characterized by two main quali-

cations that have the greatest influence on their properties; these are their ratio of constituency and their uniformity. Two materials may be mixed in any proportions; the ratio of volumes or weights of the one constituent against the other is of greatest importance; and, expressed by the density of the mixture, the con-

fuel, but also create a dangerous air-vapor mixture. Reduce the production of dust in factories, avoid whirling up of dust clouds, because they are objectionable from the hygienic standpoint of welfare to workmen, and they may create a hazard if the material is of oxidizable nature. Therefore, it should never be forgotten that to prevent all unnecessary inflammable mixtures is the first elementary rule of safety.

TABLE 2
Temperatures of Ignition of Some Materials

Material	Conditions of Experimentation	Source of Publication	Temperature of Ignition	
			Deg. Cent.	Deg. Fahr.
Oxide of Carbon	$CO+O+CO_2$	Mallard	700	1,292
	$2 CO+O_2+N_2$	Falk	644	1,191
Hydrogen	$30\% CO+70\% Air$	Mallard	654	1,209
	$2 H_2+O_2+4 N_2$	Falk	649	1,200
Methane	$30\% H_2+70\% Air$	Mallard	555	1,031
	$CH_4+2O_2+N_2$	Mallard	650	1,202
Acetylene	.....	.....	450	842
Alcohol	Air Mixture	Holm	450	842
Gasoline	Air Mixture	Constan	510	950
Kerosene	Air Mixture	Constan	380	716
Benzine	Air Mixture	Constan	350	662
Mazut	Air Mixture	Constan	380	716
Fuel Oil	Air Mixture	Constan	430	806
Tar Oil	Air Mixture	Constan	600	1,112
Benzol	Air Mixture	Holm	520	968
Lubricating Oil	Air Mixture	Holm	400	752
Lignite	Air Mixture	Hol m	250	482
Coal	Air Mixture	Holm	390	734
Anthracite	Air Mixture	Holm	440	824
Dextrine	Air Mixture	Price	540	1,004
Sulphur	.....	Bacon	248	478

REMARK: Temperature of Ignition and Flash Point of Liquid Fuels differ.

centration or dilution of one material in the other. Furthermore, as the materials mixed may have different specific weights or may present various specific tensions, it can easily be understood that within a given volume the constituents may be segregated or stratified. The uniformity of mixture has a very definite influence on the reactions that are liable to take place, and their intensities as well.

To Avoid Combustible-Air Mixtures

Before going further it seems logical to draw an *a priori* conclusion by recommending as best precaution against fires and explosions the avoidance of all mixtures of air with combustible matter. Thus will all danger be guarded against. Logical it is, but not practical, because these inflammable mixtures are often purposely wanted, to obtain a definite industrial result, while sometimes their existence is accidental or incidental to a process. Therefore this radical precaution has to take the more tolerable form: "Reduce dangerous mixtures of air with combustible material, as much as possible."

This general principle is clad in innumerable forms

TABLE 3
Upper and Lower Limits of Inflammability

Gas	Reaction Formulas (With Volumes)	Ratio		Theoretical Mixture	Limits of Inflammability	
		Gas	Air		Percent of Gas in 100 Percent Mixture	
					Lower	Upper
Hydrogen	$2 H_2+O_2+4 N_2$ (2+1+4)	2	5	28.6	10	70
Carbon Monoxide	$2 CO+O_2+4 N_2$ (2+1+4)	2	5	28.6	16	75
Methane	$CH_4+3 O_2+12 N_2$ (1+3+12)	1	15	6.25	6	16.5
Acetylene	$C_2H_2+3 O_2+12 N_2$ (1+3+12)	1	15	6.25	3	65
City Gas	1 cu. m., about 5000 Cal. or 1 cu. ft., about 565 B.t.u.	1	6.5	13.5 (about)	8	25
Water Gas	1 cu. m., about 2600 Cal. or 1 cu. ft., about 300 B.t.u.	1	33	30 (about)	15	32

in the various industries, such as: Keep gas conduits tight, because not only will gas be saved, but unnecessary mixtures of gas and air, that may create a hazard, will be avoided. Store inflammable liquids in tight reservoirs and keep the cover on the gasoline tank, because vaporization will not only produce a loss of

Gas Mixtures—Methods of Flame Propagation

Suppose a combustible mixture of two gases such as city gas with air, and let us raise its temperature locally to the ignition point, either by an outside flame, such as a Bunsen burner, or by an electric spark. The ignition will be propagated to all the mixture. The time from start to the ignition of the last gas molecules is called the duration of the phenomenon. In dividing the distance between the first and last point of ignition by the time of duration, a ratio will be obtained called average velocity of propagation of the flame, or flame velocity. In a uniform and quiet mixture the flame will spread until it reaches the sides of the receptacle in all directions; the surface of advance will have a spherical form. For ease of experimentation these phenomena have always been studied in cylindrical tubes, that permit a linear study of the phenomena.

Mallard and Le Chatelier used in their pioneer experiments tubes from 10 to 40 mm. (3/8 in. to 1 1/2 in.) inner diameter, 1 to 3 meters (3 to 10 ft.) long, closed at one end, open at the other. After the mixture had been introduced a Bunsen gas flame was brought close to the open end to produce the ignition, and the results

TABLE 4
Variations of Flame Velocities of Various Gas-Air Mixtures (after Le Chatelier)

Hydrogen <i>H</i>	Percent of Gas Velocity in M. per Sec. Ft. per Sec.	8	10	20	30	40	50	60	70	75
		0	0.6	1.9	3.3	4.3	3.4	2.3	1.1	0
		0	1.97	6.23	10.8	14.1	11.2	7.55	3.61	0
Methane <i>CH₄</i>	Percent of Gas Velocity in M. per Sec. Ft. per Sec.	5	6	8	10	12	14	15	16	17
		0	0.03	0.23	0.42	0.61	0.36	0.2	0.1	0
		0	0.1	0.75	1.25	2.0	1.18	0.66	0.33	0
City Gas	Percent of Gas Velocity in M. per Sec. Ft. per Sec.	7	8	10	12	15	17	20	24	25
		0	0.3	0.5	0.7	1.05	1.3	0.8	0.4	0
		0	0.98	1.64	2.3	3.44	4.27	2.62	1.31	0
Acetylene <i>C₂H₂</i>	Percent of Gas Velocity in M. per Sec. Ft. per Sec.	2.8	3	5	7	9	15	22	40	65
		0	0.2	2	4	6	3	0.4	0.22	0
		0	0.66	6.56	13.1	19.7	9.84	1.31	0.72	0
Carbon Monoxide <i>CO</i>	Percent of Gas Velocity in M. per Sec. Ft. per Sec.	16	20	25	30	40	50	60	70	75
		0	0.2	0.4	0.6	0.5	0.35	0.2	0.1	0
		0	0.66	1.31	1.97	1.64	1.15	0.66	0.33	0

were determined by the photographic impression of the light on a film strip moving at a known velocity.

The first observation was that gas mixtures of the various natures tested are characterized by a uniform flame velocity so long as the equilibrium of the gas mass is not disturbed by secondary effects, such as cooling of walls, currents within the gas volume or vibrations of the mixture.

These flame velocities have been found experimentally for various gases, CH_4 , H_2 , CO , water gas, city gas. The densities of the mixtures were varied and it was found that if the concentration or dilution of the gas in the air were too great no propagation occurred; this led to the conception of the upper and lower limits of inflammability. Table 3 is a compilation of these limits for various gases mixed with air. Beyond and below these proportions it was impossible to maintain any flame, and no ignition of the mixture occurred. These data have an important industrial value, as they form precise information for guidance. It is regrettable that no figures are available for industrially important gases, such as natural gas, coke oven gas, clean producer gas, etc.

Table 4 is a compilation of experimental results made to find the influence of the mixture densities on the flame velocities. These data are only indicative, as the results of each test depend on the diameter of the tubes used and other circumstances. Especially

with CO are difficulties encountered, because its flame is hardly visible and the photographic impressions are not clear. If the same gases are mixed with pure oxygen the reactions are greatly activated and the velocities increased with H up to 22 meters (72 ft.) per sec., with CO up to 2 meters (6½ ft.) and with C_2H_2 up to 200 meters (656 ft.). Fig. 2 reproduces in diagrammatic form the results of Table 3. It must be emphasized that these results have only relative value, and that not all experimenters are in accord on individual figures. The problem is so complex that it would be surprising if it were otherwise.

This simple method of propagation of the flame is explained by Mallard and Le Chatelier by the direct heat transmission; each zone ignites its neighboring strata by heating them up to the temperature of ignition through contact and radiation.

The second observation was that, under certain circumstances, the propagation of the flame took the form of a vibrating motion with a greatly increased average velocity. Fig. 3 reproduces schematically the film impression recorded of this phenomenon; it must be remembered that these very rapid oscillations sometimes reach 100 per sec. In the diagram the difference between the two methods of propagation is clearly visible. These vibrations seems to be due to local compressions caused by temperature increase, and disturbances of the quiet equilibrium of the mixture.

A third distinct observation was made by Berthelot and Vieille; during their experiments the velocities sometimes increased above 1000 meters (3280 ft.) per sec. to as high as 2800 meters (9200 ft.), and the propagation took the form of an explosive wave. These experiments have been repeated by Dixon, who found that the explosive wave phenomena never could be produced gradually. They were always sudden occurrences, of which the sketches of Fig. 4 and Fig. 5, copied from photographic records, are typical examples. Explosive waves are always accompanied by enormous pressures that make experiments difficult and dangerous, as the effects of such waves are always destructive. The existence of these extremely quick combustion reactions is explained by self-ignition of all strata of the mixture, due to the pressure created by the large volumes of high temperature gases. These explosive waves hardly occur with air mixtures; in the laboratories they are always produced with pure oxygen, but the possibility of their occurrence always exists when high pressures exist.

Concentration versus Dilution

From these theoretical data we can draw the practical conclusion that, if inflammable gas mixtures are created, their inflammability can be counteracted by either a too great concentration or a too high dilution, as under those circumstances the flame is not transmitted. In the one case the fire dies from want of oxygen, in the other from lack of combustible. Furthermore, it has been shown that explosions become particularly destructive if the expansion due to the changes in temperature are interfered with. In those cases the gases will be compressed, which increases considerably the reaction velocities and may give birth to an explosive wave causing destruction.

In industry this has been recognized, and so-called explosion doors or flap valves or safety traps are provided, in all gas mains, which open automatically to relieve any possible excess pressure inside the line in case of fires or local combustion. A third point of precaution is the prevention of an ignition through an outside source. If no kindling takes place, if fires are kept away, if electric sparks are made impossible, the danger can lie only inside, through self-ignition, which has to be prevented also by all means.

All these prescriptions are known to the gas industry in all fields, be it city gas, producer gas or blast furnace gas, and experience has proved to those interested that they have to be rigorously observed to guarantee the safety of the operators and to maintain the equipment in working condition.

In fuel gas engineering the combustible gas is never mixed with air except at its immediate point of utilization. The two gases (air and fuel) usually meet only within the burners, close to the furnaces themselves,

and their combination is therefore progressive. In fact, the greatest care is taken to prevent the existence of any mixture in the distribution lines that might create a hazard. This applies to acetylene welding as well as the autogenous cutting torches with hydrogen gas, to water gas burners as well as open-hearth furnace ports.

(To be concluded)

Electrical Machinery Manufactured

WASHINGTON, July 18.—Manufacturers of electrical machinery and apparatus in 1919, according to figures issued by the Census Bureau, amounted to \$1,014,373,000, compared with \$359,432,000 in 1914, an apparent increase of 182 per cent. But it must be remembered that unit prices in 1919 were far higher than in 1914. With "index" at 87 in 1914 and 161 in 1919, the 1919 product, on the basis of 1914 prices, would have been about \$548,139,000, the corresponding increase being 52½ per cent.

In the following table are the reported figures for the total and for the principal items of interest. The great development of household electrical devices will be noted; also the effect of the wireless upon the production of telegraph apparatus. Automobiles accounted for much of the growth of batteries.

	1919	1914
Number of establishments.....	1,483	1,121
Value of products.....	\$1,014,373,000	\$359,432,000
Of which—		
Motors (not including starters or controllers).....	116,898,000	44,176,000
Generating apparatus and parts.....	86,266,000	23,233,000
Insulated wire and fittings.....	84,217,000	69,506,000
Batteries, storage, dry, liquid.....	92,506,000	23,402,000
Incandescent lamps.....	59,372,000	17,350,000
Magneto-ignition apparatus, etc.....	47,389,000	22,261,000
Telephone apparatus.....	46,340,000	22,816,000
Telegraph apparatus, all types.....	12,816,000	2,248,000
Industrial and household apparatus and devices.....	54,998,000	4,049,000
Transformers and feeder potential regulators.....	31,691,000	13,120,000
Electric locomotives.....	8,161,000	3,721,000

Blast Furnace CO Not Permanently Harmful

Frequent exposure to carbon monoxide causes headache and malaise, but no evidence has been found of a cumulative harmful effect, according to a report of Dr. Henry S. Forbes, Division of Industrial Hygiene, Harvard Medical School, published in a recent issue of the *Journal of Industrial Hygiene*. The report is based on a survey of metal mines, coal mines, blast furnaces and producer gas boilers and engine rooms in eight states. "Carbon monoxide," says the report, "as met with in metal and coal mines and about blast furnaces in this country rarely causes late after-effects following acute severe gassing. When such effects do appear, there is evidence, almost always, of a pre-existing pathological condition. A recent advance in treatment has been made by adding carbon dioxide to the oxygen inhalations administered. Recovery is three times as rapid as when oxygen alone is used."

Shipyard Wages Cut

Wage reductions, effective Aug. 1, or shortly thereafter, have been planned in nearly every shipbuilding district between Maine and Texas. The plan includes complete reclassification of labor, and adjustment of wage scales according to ability. The cut will affect both piece work rates and hourly rates for it is pointed out that, except for a 10 per cent cut in March, the wartime rates have been maintained.

It is expected that the Delaware River district will be first affected, announcements having already been made that the new scale will be put into effect Aug. 1 by the New York Shipbuilding Corporation, Merchant Shipbuilding Corporation and Sun Shipbuilding Co. It is stated that a still further cut may be required, if the new scale fails to reduce construction costs enough to meet competition.

The Fore River Works, Quincy, Mass., Bethlehem Shipbuilding Corporation, is to cut its working force one-third, bringing it down to approximately 5000. A reduction in wages, amounting to 15 per cent, goes into effect July 15.

Percentage of Defective Castings Too High

Many Foundry Losses Could Be Prevented by
the Proper Study of the Human Factors—
Responsibility of the Purchasing Department

—BY HERBERT W. RAMP*

EVERY person intimately connected with the foundry industry realizes the importance of the entry "Defective Castings" in the records of the business and views the percentage with apprehension when it begins to ascend. This is the most constant point of leakage in the foundry and shows a clear-cut wastage that is often quite unjustifiable.

Defective castings are to the foundry what leaky containers are to the shipper. They stand out as a tangible loss that never fails to impress the executive. They may run at an ordinary average for months and then, without apparent cause, burst forth like a regular epidemic, causing expensive analysis and attention. Equipment will be changed, material rejected, or men replaced in the effort to correct the condition, and often the troubles will be ironed out until it seems that defective work will be the rare exception, when suddenly out of a clear sky the trouble will start again and refuse to yield to the treatment that cured it before and another cycle of loss and delay will follow.

An excessive proportion of bad castings is a menace to the successful conduct of the business, for it interferes with two most important fundamentals—production and low cost. A foundry must have a reputation for promptness in deliveries in order to procure and hold trade, as well as be in line on the price question.

It is scant satisfaction to a customer to know he gets a slightly superior quality, or a little lower price, if he cannot get the material to fill the orders on his books, or maintain his schedule because the foundry has made so many defective castings, and it is equally galling to the management to see its profits absorbed by this item.

The old questions are still being asked: "Why is it that 5 to 15 per cent of the castings made have to go back to the cupola as scrap?" "Why can a molder make ten good castings and then lose five?" "Has the foundry business no real foundation for its practice?" One answer often given, "It is the human element," has more significance than is usually accorded it and some points in its application may be profitably considered.

The Foreman Factor

There are few standards or definite formulas in foundry work. Every foreman is a law unto himself. He has been educated, not in the school of chemistry or mathematics, but in first-hand experience. No one prescribes for him how his sand must test, what percentage of moisture it may contain, or how he must pour or vent a certain piece. He has worked on certain lines with certain material and produced satisfactory results; he naturally feels that he is the Moses to lead the way out of the wilderness, and often a temporary success makes him feel his judgment is infallible. He closes his eyes and ears to what others are doing, with the result that when trouble comes he has nothing but his own experience to fall back on. He has contested or discounted every other man's efforts until he is unable to absorb others' ideas, and he has to stand or fall upon his own necessarily narrow information.

This is the first "human element" in the foundry—the mind that directs the practical operations. The foreman must be broad enough and clear enough of vision to keep in touch with the progress and development made by his men if he expects to conduct the business profitably.

Variables in the Workman

Again, workmen in the average foundry do little routine or automatic work. They may be employed

upon the same class of product, or even the same pattern, but the changes in the material or conditions, the character of the operations, the dependence of one branch of the work upon another, call for the constant exercise of judgment on every casting made. The molder must make the casting, not as the contractor builds the house, according to plans and specifications, but so that the completed casting will be satisfactory. He may often be called upon to make one that has never been molded before, for which there are no gages or templates, text books or standards to guide him. He must be the pioneer and blaze his own way to success. His judgment and interest in his work make him a good mechanic or a poor one.

Coupled with these variations of work, a great influence is exerted by the physical and mental condition of the workman. His habits of life, his health, the state of his home life, all have a bearing on the quality of the work he produces, and this "human element" demands that the foreman study the individual ability and habits of his men to determine their fitness to produce the kind of work desired.

Because a certain molder is paid the ruling rate of wages or has served a regular apprenticeship at the trade does not decide that he is capable of making a good automobile cylinder, or a lathe bed. Hire and educate a hundred molders and you will find a hundred varying shades and degrees of workmanship and ability. It is as important to select the right man to perform the work as it is to choose the material or equipment used in its production, for foundry work is rarely routine. You cannot set the speed and feed and leave the workman to stop and start the machine. He must use his brains and when he neglects to do this defective castings increase and costs ascend.

Changes in Raw Materials

The material furnished the foundry is another important factor. It is not enough that it should be a standard make, or that it meet certain chemical specifications. It should above all else be uniform. This is often more important than the grade of material purchased. The foundry foreman and employees learn by practical contact with the supplies the best way to use them. Often without warning changes are made without the knowledge of the foundry. A new brand of pig iron or a new coke has been purchased; sand has been secured from different pits, or other supplies furnished from new sources. While the materials may be equal in quality to what they were using, it is strange country to the men and the foundry goes through a period of experimentation and loss before they forget how to use the old material and learn how to use the new.

The "human element" has been at work in the purchasing department. In their desire to make a showing for their end of the business, the buyers have substituted new material for that against which there was no complaint, perhaps because the new could be purchased slightly cheaper, and the results in the foundry may be loss and defective castings. When the foundry complains of this substitution, the purchasing agent usually replies: "Brown & Brown use this material and find it all right; why can't you?" or "It analyzes the same as what you were using." He fails to realize that Brown & Brown may have spent much time and money learning to use it and continue for that very reason. They know the cost of a change.

A Case in Point

I have in mind a case where castings kept coming bad for several months. One week they would be good,

*American Locomotive Co., Dunkirk, N. Y.

the next week they were condemned. Everything possible in the way of practice was tried without avail until a survey of all the material used showed the contract for the sand used in making the molds had been divided. Part was furnished by a dealer who knew what the foundry wanted and part by a new dealer who did not know. The sand from both was unloaded in one bin for the winter's supply. One grade was all right and the other was not. When the sand that was unsuitable was used the castings were bad; when a vein of the good sand was struck they were satisfactory.

The small saving effected in purchasing was lost a hundred times over in the foundry. The purchasing agent's duty to buy cheaply is unquestioned, but he should consider, first, that satisfactory material is of the greatest importance; that different men give their material different treatment. If it seems wise to change and often it may be, the change should be made with the co-operation of the shop man. The material should be tested and proved out by the men who must use it and a uniform and constant quality supplied as far as it is humanly possible.

Changes Require Infinite Care

Due to the lack of standards and the need of uniformity in supplies furnished the foundry, it becomes a fertile field for experimentation. When trouble occurs and defective castings result, the man in charge turns to other methods and ways of doing the work and that is the time when sound judgment must be used.

There are so many ways to make a casting bad; so many different things can cause the same defects; so many workmen contribute to its making that the real cause of trouble is often obscure and sometimes the best men fail to diagnose the symptoms correctly, so that when a radical change is made it must be watched and tried and tried again.

Don't declare the new method a success because it worked all right the first few times. Get an average over a period, see if it stands the test of time when the special interest and attention that are given to something new are withdrawn. Prove it right before you make a carload of work that may be rejected, for the most experienced may overlook some point or some unforeseen trouble may develop. Don't avoid new methods; search for them, cultivate them. It is the road to progress and good castings; but don't let en-

thusiasm over an apparently successful new method lead you into a bad hole and a heavy loss.

The Right Sort of Preparatory Work

A common reason for defective castings is that many foremen do not prepare ahead of time to overcome known trouble. A certain casting will be ordered and many will be spoiled; but finally the order will be filled and the pattern sent back to storage. Later the same casting will be ordered again and the same troublesome period will be gone through until that particular pattern grows to be considered a Jonah and is feared by the entire organization.

These are the jobs that run up the percentage of defective castings—the ones that are not mastered. When one loss has been sustained on a pattern, the foreman should set himself to work to control and correct that trouble. The time for experiment and study is when there is no order crying for production, when careful research can be made even though it means making some castings that are not on order and may never be used. It is a great deal more economical to make a few castings experimentally that will be scrapped than to lose 10 or 20 per cent of an order when the shop demands the product. Besides, this is taking the right attitude toward defective work—meeting it face to face and fighting it out, not heaving a sigh of relief when the order is filled.

Design Real Reason for Many Defects

Again, many of our troubles arise out of the design. The engineer makes his designs as he wants them. He does not know that the changing of the thickness of a section, the addition of a lug or boss, may change the manner in which the shrinkage of the iron occurs.

It may seem impossible that a small deviation from a tried design will give the foundry trouble; yet this is often true. And the foundryman may look everywhere else—to his iron, his coke and his sand—before he finds out that the design was the real reason for the defects. This point must be studied by the foundryman. He cannot expect his engineer to know how molten metal acts in a mold. He does not always know himself. The engineer must be open-minded enough to co-operate and change his design where practical and when requested by the foundry. An hour's work in the engineering department has often saved thousands of dollars in the foundry.

Ruling As to Rates on Bars

WASHINGTON, July 19.—The Interstate Commerce Commission has handed down a decision ordering the application of the same rates to cold-rolled steel bars as are given to merchant bars, on or before Oct. 1, on shipments from Cumberland, Md., in the Atlantic Seaboard territory, and from Beaver Falls, Pa., and other points adjacent to but not in Seaboard territory, to Galveston, Tex., by way of New York. The decision involves a complaint of the Texas Carnegie Steel Association vs. the Baltimore & Ohio et al. The commission held that the combination rail-and-water rates on cold rolled or drawn steel bars, bar iron (polished), and shafting are unreasonable and unduly prejudicial in so far as they exceed the rates on merchant bars and also that they violate the fourth section in that they are higher than the rates contemporaneously in effect over the same route by way of Galveston to Houston and other points in Texas.

Commissioner Hall, who prepared the decision, described processes with regard to the manufacture of the different kinds of bars to show that there are instances in the market where merchant bars are more valuable than shafting or cold-rolled bars. This was done to support the position that the difference in value is not sufficient justification for a variance in rates. The New York-Galveston water component was the one specifically attacked. It is 19c. higher on the cold-rolled bars and shafting than on merchant steel bars. The carriers defended the higher rate on the ground that the polished bars, used in making machinery shaft-

ing, automobile axles, etc., being covered with grease, were harder to handle and more likely to cause damage to ships by slipping out of the slings. It was also claimed that bending of the polished bars is more serious than the bending of merchant bars. Commissioner Hall said that the boat lines, while alleging the greater danger in handling the polished bars, had not introduced any evidence to show that they had ever paid any loss and damage claims on shafting which were attributable to the greater difficulty in handling or the fact that they were bent while in transit. Attention was called to the fact that the railroads make no distinctions between cold-rolled and other kinds of bars.

P. J. McBride and George B. McClennen, heretofore part owners of the Delta Equipment Co., 148 N. Third Street, Philadelphia, have purchased the company and now have sole ownership. The company will be continued under the same name. It recently purchased for its exclusive use the four-story building in which it is located. The Delta Equipment Co. deals in machine tools, electric motors and generators, boilers, engines, feed water heaters, pumps, air compressors and similar equipment.

Effective July 15, the Colonial Steel Co., Pittsburgh, announces a cut ranging from 8 to 15 per cent in all grades of tool steel. The company now is quoting No. 6 oil-hardened steel at 30c. per lb.; No. 7 Vanadium 24c.; No. 14 special 21c.; and its red star brand tool steel at 13½c.

Reasons for Wage Revisions Are Explained

President James A. Campbell Fears Prices Must Be Still Further Reduced—Believes Present Conditions Due Largely to High Freight Rates

"STEEL products have declined from \$20 to \$30 per ton since the prices were fixed by the Government, and my fear is that further reductions must take place in order to equalize with the farmer," states President James A. Campbell of the Youngstown Sheet & Tube Co., Youngstown, Ohio, and a director of the American Iron and Steel Institute, in explaining the general wage reductions by independent interests, effective July 16. "These cannot be made without further reduction in costs. We have no assurance at present of a reduction in freight rates. Hence, we can only reduce our costs by reducing wages, which is unfair to our employees, as railroad wages have not yet been reduced to correspond.

"Not only the steel industry but all lines of industry, from the farm to the factory, and not only in this country but the world over, are seriously affected by this depression. The majority of the farmers have not yet sold all of their last year products—grain and cotton—and there are large stocks of these still on hand. Many of the farmers were advised by their bankers not to sell when they had the opportunity, on account of prices being lower than they expected to prevail later, but on the contrary, all of the products of the farm are now selling at lower prices than at any time since 1915, with some of them at lower prices than obtained prior to the war.

"There is some reason for every depression. In 1907 it was a financial depression, caused very largely by fear on the part of the people as well as on the part of the banks. With our improved Federal Banking system, the time, I believe, has happily gone by when we will have financial panics; so that we must look in some other direction for the cause of the present depression in all lines of business."

Cause of the Slump

Mr. Campbell attributes the current slump largely to high freight charges. "Since the first of January, I have talked with a large number of people on the subject of freight rates and their relation to the business depression, because this has been foremost in my mind all the time, and nearly every well informed man discussing it with me agrees that my diagnosis is correct," he adds.

"Our company has lost a large percentage of its export business, and I fear we can hope for little improvement in this respect as long as there is such a great disparity in exchange and wage rates as at present. It therefore behooves us to 'get our own house in order' so that the domestic business of the country can go on with as little disturbance as possible.

"If we have located the trouble, what is the remedy? The railroads are still paying a higher rate of wages than during the war. The union leaders, who control railroad labor, are refusing to make concessions. Even at present, with the small amount of transportation offered, many of the railroads are not breaking even; and while the War Labor Board ordered a wage reduction of about 12 per cent, effective July 1, this will give little relief.

Results of Reclassification

"The classification of railroad labor is even worse than the rate of wages the roads are paying, as in some cases railroad men who were receiving \$60 a month prior to Government control were by reclassification raised to \$240 per month under Federal control. Common laborers who were oilers of the block signals, receiving about \$1.75 to \$2 per day before Government control, were paid as high as \$6 and \$7 per day, reclassified as electricians. This classification was made

under what is called the 'National Agreement' and was arranged by labor leaders who were called in consultation by Mr. McAdoo, when he was Director General of the railroads. Very recently there was considerable pressure brought to bear on the Railroad Labor Board to have it abolish the National Agreement, which it did, but in doing so specified that the railroads must make their own classification in agreement with their own workmen. Now these workmen, through the union labor leaders, are demanding that no change be made in the classification from that specified in the National Agreement.

"The railroad managers' hands are tied, and the railroads are under what might be called the triple control, with their managers looking after the operation of the railroads, the War Labor Board fixing the wages of railroad employees, and the Interstate Commerce Commission fixing the income, or rates received, which are based largely on the financial returns of the companies. Until this triple control is done away with and the railroad managers are held responsible for the operation of their lines, for the adjustment of wages with their employees, and for the freight rates charged, we cannot hope to get anywhere.

Favor Reasonable Wages

"I believe, of course, that railroad labor should be paid reasonable wages; but these wages should be in line with the prices of commodities and also in line with wages paid for other activities in the communities which the roads traverse. For instance, wages in the South are usually considerably less than those prevailing in New York, Chicago or Pittsburgh, or other congested districts because it costs less to live in many sections of the country than it does in other sections; and for that reason railroad wages should not be as they are now, alike the country over, but should be in line with the cost of living in each section; and only selfish wage earners or demagogic politicians believe, or pretend to believe, that railroad wages should remain as they were while the price of every commodity is being reduced.

"Many men in this community are walking the streets without employment. Most of these are willing to accept work at reasonable wages, and I am anxious to do everything I can to help them secure employment. The American Federation of Labor, at its recent meeting in Denver, made the statement that it would resist every reduction of wages in all lines. This is at least a selfish viewpoint. It is unfair to the workmen of this and every other community to suffer reduction of their earning power and at the same time be taxed, as they are on everything that they eat or wear, to keep the wages of railroad employees above what they are willing to accept for their own services."

Unique "No-Accident" Campaign

An impressive "No-Accident" campaign was launched July 14 at the Farrell, Pa., works of the American Steel & Wire Co., to show a clean safety sheet. The desirability of exercising caution at all times was stressed in talks by operating officials and by a pageant. John McHugh, assistant superintendent of the Farrell plant, acted as chairman. One float in the pageant represented four pallbearers bearing a casket which contained the remains of "Mr. Carelessness." A mule that has been working at the plant for 14 years bore a banner with the following inscription printed on both sides: "I am a dumb animal and have served 14 years without an accident. Have I more sense than you? Get some new sense." A truck loaded with old and new tools also conveyed the importance of the drive.

STEEL SHIPMENTS TO CANADA

New Regulation by the Dominion Government as to Imports from the United States

TORONTO, July 18.—Firms having occasion to import material from the United States are having an opportunity of seeing in action the proposals set forth by Sir Henry Drayton, Minister of Finance, in his last budget speech at Ottawa.

THE IRON AGE correspondent saw an invoice going through the office of the United States Steel Products Co. here, and on the bottom was the following wording:

We certify that the fair market value as shown on this invoice is not less than the cost of production of similar goods on the date of shipment to Canada, plus a reasonable profit thereon.

To get at the meaning of this, one must turn to the situation confronting the authorities at Ottawa, when they were faced with the action of the United States Government in placing further barriers against the selling of farm produce in the United States. Previously much of this was bought by the United States for re-export to Europe, but this is out of the question now. Ottawa feels that either Canada is not selling enough to the United States, or the United States is selling too much to Canada. Of our total trade during the past year, 57 per cent was with the United States. Of total imports of \$1,240,125,056, those from the republic to the south were no less than \$856,593,470, or 69 per cent of the whole.

Sir Henry Drayton's Views

Speaking in the House of Commons, on May 8, Sir Henry Drayton, Minister of Finance in the Meighen Government, said: "As already pointed out, temporary tariff legislation of the United States would place a barrier against our exports to that country, amounting to no less than \$168,000,000. Such or similar action made permanent, of necessity would require a careful and permanent revision of the Canadian tariff for the purpose of insuring the proper continuance of Canadian business—of insuring employment and Canadian stability—a matter of gravest moment to all our people. . . . Much of the unemployment at present existing results from the importation into Canada of goods at prices below the cost of production. In so far as the public is concerned, little price advantage has accrued to them from these importations. . . . Goods ought to be valued for customs purposes, not at forced-sale prices, justified by temporary quotations in the foreign market, but having regard to the regular standard value in that market and to cost of production, and a reasonable profit thereon."

What Amendment Says

Following the declaration of his principles, Sir Henry went on to propose the following amendment to the Canadian customs act:

Provided that the value for duty of new or unused goods shall be in no case less than the actual cost of production of similar goods at date of shipment direct to Canada, plus a reasonable profit thereon, and the Minister of Customs and Inland Revenue shall be the sole judge of what shall constitute a reasonable profit in the circumstances.

The amendment was adopted, and came into effect on June 30. Toronto dealers, jobbers and warehouse interests believe the ruling will interfere with business coming from the United States. One dealer says, "The Government evidently does not know that the great bulk of steel business is being carried on just now without any 'reasonable profit' attached to it. The business of liquidation is still in progress. I think it will mean that we will be unable to take advantage of chances that come up of buying in lots from mills and jobbers at very advantageous prices, which we always try to pass on to our customers. Shipments are very light at the present time. Were they heavier, and business normal, the ruling probably would have never been made, for there would have been no reason for it. On the face of it, it seems as if the price to Canadian

users will have to be marked up, to the advantage of Canadian steel makers."

Another Clause

The number of firms in the United States that have opened banking accounts here and are taking payments in Canadian money must run into hundreds if not thousands. The charge has been made several times that the absorption of the exchange has been used as another means of beating out the anti-dumping law, which makes it necessary for American goods to be sold here within 5 per cent of the selling price in the United States. The new ruling covering the computing of tariff charges from countries where Canadian money is not at par is as follows:

Notwithstanding any of the provisions of this section, in computing the value for duty of the currency of an invoice, no reduction shall be allowed in excess of 50 per cent of the value of the standard of proclaimed currency of the country from whence the goods are invoiced to Canada, irrespective of the rate of exchange existing between such country and Canada on date of the shipment of the goods, and in respect of goods shipped to Canada from a country where the rate of exchange is adverse to Canada, the value for duty of the currency of the invoice shall be computed at the rate of exchange existing between such country and Canada at the date of the shipment of the goods.

The trade in Canada agree that the foregoing is aimed at the importation of goods from the United States to this country. Machine tool dealers differ as to the probable effect. Some of them hold that the better class of machine tools are not sold "at a price" at any time, and there will be little difficulty in selling, no matter which way the amount of duty is collected. Several of them have stated that the trouble will be in trying to get a Canadian substitute for certain lines which they have been bringing from across the border.

The steel and machine tool trade in general seem to accept the two rulings as part of the Ottawa Government's policy to protect Canadian trade from further depletion owing to the increased adverse exchange rates, and at the same time to do something for the manufacturing interests in the Dominion which have been persistently calling for support of the "Made in Canada" idea on the plea that it would help right exchange difficulties.

An Explanation Offered

BUFFALO, July 18.—Some explanation of the Canadian Government's ruling, referred to in the Buffalo market report in THE IRON AGE of July 7, with reference to information as to costs and profits appearing on shipments into Canada, has been made to mills and offices and the drastic nature of the ruling is modified to some extent. Steel men are informed that the purpose of the ruling was not to prohibit shipments from the States, but was aimed at Central European competition in steel products. In other words, the Canadian interests said the influx of materials from Europe threatened to interfere seriously with domestic manufacturers and the ruling followed. It is known that a number of shipments from the United States have been held up and the invoices returned to the shipper with directions to supply the information as to costs and profit. American shippers now understand that a reasonable assurance that goods are made at cost plus a reasonable profit will expedite shipping.

Fairbank & Co., Cleveland, have been appointed exclusive sales agents by the Chippewa Iron Mining Co., operating in St. Louis County, Minn., on the Vermilion Range. A considerable tonnage is available for shipment this year and the firm will be in position to ship between 300,000 and 400,000 tons during the season of 1922. There will be several grades of ore of both soft and hard hematite.

The sixth annual convention of the National Association of Purchasing Agents will be held Oct. 10-13 at Indianapolis, Ind.

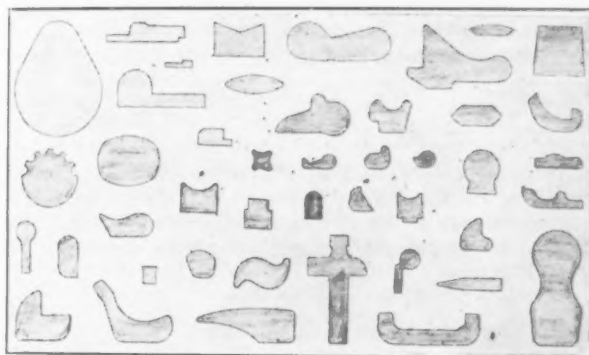
Production and Uses of Cold-Drawn-Steel

Extensive Application in Many Industries—
Annual Output Estimated at 900,000 Tons
—Automobile Field Largest Consumer

BY C. E. BREGENZER

COLD-DRAWN steel has a wide field of application and there are few industries which do not use it in some form. The annual output last year is estimated at about 900,000 tons, or close to 3 per cent of the total finished steel.

The automobile industry has been one of the largest consumers. Its favored use for screw machine products and the fact that about 33 per cent of cold-drawn steel is handled through jobbers makes it a matter of some difficulty to determine accurately the relative percentages used by various industries, particularly as manufacturers have markets in some lines where others are



Group Showing Wide Range of Special Cold-Drawn Steel Shapes

not represented. A survey of the field gives approximately the following percentages:

Industry	Percentage
Automobile	30
Screw machine products	23
Agricultural machinery	15
Machine tools, textile machinery, printing machinery, etc.	8
Electrical machinery	5
Typewriters, cash registers, sewing machines, washing machines, etc.	7
Shafting	6
Export	6

These percentages of distribution showed considerable variation during the latter part of 1920 and early part of 1921, especially in the automotive and the agricultural machinery field.

Uses

The main uses of this steel are indicated in the table showing allocation of percentages in the various industries. It can be used for all purposes for which finished steel is used and has a well established place as a product of the greatest utility to machinery and automotive parts manufacturers, and new uses are being discovered constantly. One of the best known is for stock for automatic screw machines, semi-automatic screw machines, wire feed screw machines and turret chucking machines, where it has proved most uniform for cutting, threading, forming and parting. Wear on tools is also reduced. It owes its popularity in the automotive industry to the high-speed production which it makes possible due to its free cutting qualities and to the fact that, when it is used as a substitute for drop forgings, it saves machining. A list of uses follows:

Adding machine parts	Machine gun parts
Aeroplane parts	Mine car parts
Arbors	Mining machinery parts
Automobile parts	Motorcycle parts
Agricultural machinery parts	Moving picture projector parts
Automobile accessory parts	Motor truck parts
Axles	Molding
Ball races	Novelties
Balls	Nuts
Bag filling machine parts	Numbering machine parts
Baking machine parts	Package machine parts
Billing machine parts	Phonograph parts
Bolts	Propeller shafts
Bicycle parts	Piano hardware
Cranes	Pinions
Connecting rod keys	Pin stock
Candy machine parts	Piston rods
Center tilt keys	Plates for electroplating
Camera parts	Pneumatic machinery parts
Clutches	Propeller shafts
Carpet sweeper parts	Printing machinery parts
Crank shafts	Pump rods
Cash register parts	Racks
Calculating machine parts	Rear axle shafts
Casket handles	Roller skates
Chair rims	Roller chain parts
Clasps	Rollers for bearings
Cones	Roller bearing hangers
Concrete mixing machine parts	Round end feather keys
Cream separator parts	Rivets
Culinary utensils	Screws
Cups	Screw drivers
Curtain rods	Sewing machine parts
Cutlery	Stove parts
Dovetail keys	Stove trimmings
Dowel pins	Shafting
Driving shafts	Shoe eyelets
Electrical machinery parts	Shoe horns
Electrical appliances	Scale parts
Electrical iron shells	Spark plug shells
Elevator guides	Show case parts
Fan shafts	School desks
Firearms parts	Skate runners
Flat taper keys	Slides
Furniture molding	Small tools
Furniture parts	Special gib head keys
Furniture trimming	Splines
Gages	Spindles
Gears	Studs
Gibs	Textile machine parts
Go-cart trimmings	Telephone instrument parts
Grain drill parts	Textile machinery parts
Guides	Threshing machine parts
Guns	Tool steel keys
Hand bag frames	Toy parts
Hardware specialties	Tractor parts
Hubs	Turnbuckles
Instruments	Typewriter parts
Jar caps	Type
Keys	Vacuum cleaner parts
Lantern frames	Watch parts
Locomotive parts	Washing machine parts
Lock washers	Woodruff keys
Marine engine parts	Wrenches
Machine tool parts	

The following list shows further uses of cold-drawn steel in some of the products noted above under parts:

Automobile, Motor Truck and Motorcycle Parts

Magneto.	Cam rollers
Interrupter levers	Push rods
Armature gear blanks	Cams
Starting motor shafts	Armature shafts
Switch sleeves	Wrist pins
Pole piece section	Transmission countershafts
Distributor shaft	Bearing balls
Axles	Bearing rollers
Spark plug shells	Propeller shafts
Conduit clamps	Spindles
Cable clamps	Rocker arms
Washers	Valve lifters
Steering wheel pivot pins	Shifter rods

Rifle, Revolver and Machine Gun Parts

Barrel spline	Sleeve
Bolt stop screw	Stock bolt
Bolt stop spring rest	Butt plate bracket
Butt plate spring screw	Butt swivel plate
Butt swivel	Magazine end
Extractor collar	Rear sight slide
Floor plate	Front sight carrier pin
Front sight carrier	Sear
Guard screws (various)	Sear stud
Band pin	Sear pin
Band screw	Trigger pin
Bolts	Cocking piece
Screws	Floor plate catch
Nuts	Safety lock plug
Safety lock holder	Striker

Typewriter, Billing Machines, Etc., Parts

Carriage frame rails	Ribbon spool driving ratchet pawl
Tabulator rack	Drop platen
Carriage frame front roll bracket	Line finder lower wire bracket
Margin stops	Line space driving shaft cam
Actuator driving pawl	Line space lever shaft bracket
Tabulator blade frame	Way rod

Hardware Specialties

Bells	Knives for food choppers
Chest handles	Locks
Door knobs	Metal furniture
Door plates	Metal molding
Door stops	Mince knives
Drawer pull	Lush plates
Electric fan base	Sash lifts
Escutcheons	Sash locks
Ferrules	Slides
Hack saw frames	Stove ornaments
Keys	Trunk hardware

Steel and Alloys Used for Cold-Drawing

All grades of steel, including alloy steels, are used for cold-drawing. Bessemer steel is the most suitable for stock for screws, bolts, nuts, spark plugs, gun and automotive parts, sewing machines, typewriters and practically every product of automatic screw machines. It is free cutting, accurate as to size, concentricity and straightness.

Open-hearth steel is also used for screw stock. It does not machine as freely as Bessemer but is used where more strength is required. Nickel steel, 3 to 3.50 per cent, is used for parts highly stressed, subjected to shock and vibration and possibly requiring

threading. It is much used in the automotive industry and gives good service for shafts, ball and roller bearings, gears, spindles, axles, bolts, studs, piston rods, crank shafts, propeller shafts, clutches, turnbuckles, engine motor, machine and transmission parts. Nickel steel of 1 to 1.50 per cent is used where a better quality than plain open-hearth steel is required, also for minor structural purposes in machine manufacturing.

Chromium steel machines readily and has a good range especially for ball races, cups and cones. Chrome-nickel steel is used for important structural parts as it is very tough and has great ability to withstand shock. It should be heat-treated after cold-drawing, otherwise there is no gain commensurate with the increased cost. Chrome-vanadium machines more readily than chrome-nickel and is used for the most important case-hardened or heat-treated parts. It is suitable for shafts, gears, axles and important machine parts. Vanadium steel is used when increased elastic limit, tensile strength and durability are required.

The illustration shows some of the special shapes which have been cold-drawn. Any shape can be drawn for which a die can be made. The experience gained by American manufacturers in the manufacture of cold-drawn products indicates accuracy as to shape and high finish as to smoothness of surface. Investigations abroad show that British and German cold-drawn steel does not equal American products, the former lacking accuracy and the latter being brittle.

United States Copper Production

Figures of the United States Geological Survey show that the smelter output of copper in 1920 amounted to 1,209,061,040 lb., compared with 1,286,419,329 lb. in 1919 and considerably larger amounts in the four preceding years, as shown in the table. The value of production in the United States in 1920 is given as \$222,467,000, as compared with \$239,274,000 in 1919 and considerably larger amounts in the four preceding years. It is to be noted that the low figures of value in 1919 and 1920 are evidence of the lower price at which copper has been sold during the past two years.

	1915	1916	1917	1918	1919	1920
Smelter output.....	694	964	943	954	643	605
Mine production....	744	1,093	948	955	...	...
Consumption, new copper.....	568	739	697	831	457	527
Exports, metallic....	341	352	563	372	258	312
World production*..	1,189	1,495	1,569	...	1,191	...
Copper ore produced..	43,404	57,863	58,483	62,289	...	...
Average yield, per cent.....	1.66	1.70	1.60	1.51	...	...
Average price, per lb.....	17.5c.	24.6c.	27.3c.	24.7c.	18.6c.	18.4c.
Value, millions....	\$242.9	\$474.3	\$514.9	\$471.4	\$239.3	\$222.5

*All other figures are for United States only.

Figures are not yet available for the production of the mines in either 1919 or 1920, nor for the production of copper or average yield of copper per ton in those years. The latest figures for copper ore produced are those of 1918, with a total of 62,289,069 short tons, from which the average yield of metallic copper was 1.51 per cent. The average price of copper in 1918 is given as 24.7c. per lb. compared with 18.6c. in 1919 and 18.4c. in 1920; the present price is under 13c.

Figures for the world production of copper for 1920 are wholly incomplete. For 1919 figures are available for most of the countries producing large amounts. If the 1919 production of the other countries be estimated at the same figures as obtained for the last year for which figures are available, the grand total for the world is 2,202,885,000 lb. American production in 1919 represents, therefore, 58.4 per cent of the total world production, compared with 64.4 per cent in 1916.

By adding to the United States stock of copper at the beginning of the year the total supply of new copper, and then deducting from the sum the amount of copper exported and the stock at the end of the year,

an estimate is obtained of the apparent consumption of copper by the United States. This figure for 1920 is 1,053,838,558 lb. as compared with 914,471,572 lb. in 1919 and considerably larger quantities in the four preceding years.

Sheet and Tin Mill Workers Reduced

Average invoiced selling price of Nos. 26, 27 and 28 gage plain sheet steel shipped by Mid-Western mills during the 60-day period ended June 30 was disclosed as 3.85c. per lb., at the bi-monthly examination of sales sheets July 14 at Youngstown, Ohio. This was a decline from 3.95c. revealed two months before, and sheet workers as a consequence sustained a reduction of 3 per cent on the base rate for the July-August period. The actual working reduction, however, from the rate paid in May and June is less than 2 percent. The tonnage rate for sheet mill employees is still 51 per cent above base, as compared with 109½ per cent at the peak rate during the war.

Tin mill workers sustained a larger loss in tonnage rate, however, as the examination disclosed a reduction in the price of tin plate per base box to \$5.95 from \$6.50, on which the May-June rate was based. This decline in selling price produced a reduction of 11 per cent in the base rate, or an actual cut on the going rate of 7 per cent. Tin mill employees are now paid a rate which is 49 per cent above the base.

The average shipment price of tin plate during the past two months compares with a nominal market quotation of \$5.75 per base box, and in the case of sheets 3.50c. per lb. As neither of these prices is regarded as firm, it is likely that wage scale adjustments will continue to trend downward.

The settlement was conducted by representatives of the Western Sheet and Tin Plate Manufacturers' Association and the Amalgamated Association of Iron, Steel and Tin Workers.

Chicago will likely be selected as the meeting place for the adjourned conference to adjust the bar iron scale. Representatives of both the Western Bar Iron Association and the Amalgamated Association of Iron, Steel and Tin Workers will convene on Monday, July 25, in separate conferences, and will meet in joint session on July 26. At the previous conference in Atlantic City early in June, manufacturers and the men were unable to agree upon the new contract.

RECORDS COMBUSTIBLE GAS

Duplex Mono Indicates Both CO₂ and Escaping Burnable Gas

A gas recorder which not only shows the amount of CO₂ in the flue gases of a boiler furnace, but the escaping combustible gases as well, is being manufactured by the Mono Corporation of America, 25 West Broadway, New York, the instrument being known as the Duplex Mono. The maker calls attention to the fact that the maximum efficiency in firing is secured when the highest amount of CO₂ results without the accompaniment of combustible gases and that the Duplex Mono gives a complete indication of all the elements of waste heat.

No moving mechanical parts are used to force the gas through the apparatus. Mercury is used instead and also performs the functions of valves. The apparatus is dust-proof and is found to require little attention.

The accompanying flue gas recorder chart was produced in tests of a boiler furnace. The clear space at the bottom represents CO₂ in the flue gases, while the lightly shaded areas between the white area and the heavily shaded area indicate combustible gases. The chart reveals as a whole by the continual presence of combustible gases, improper firing and poor draft regulation, in spite of the high amount of CO₂.

The Duplex Mono serves to make sensible heat and combustible gas losses visible to the fireman and the plant executive. No limit should be placed on how high the CO₂ should be kept by the fireman, provided he avoids combustible gases in the flue. Under this régime, the fireman who maintains the highest average CO₂ record with the least evidence of combustible gases is the best man, provided, of course, that he carries his share of the load.

By-Product Coke Production

WASHINGTON, July 19.—Reports from operators of by-product coke ovens again are being received by the Geological Survey, after having been discontinued at the close of the war. The Survey as a result has resumed publication of production figures, and in its weekly report of July 16 gives current statistics for June in a preliminary and estimated form. The total output, on this basis, for that month was 1,540,000 net tons. In comparison with the monthly average for 1920, this was a decrease of 1,025,000 tons, or 40 per cent. As the present maximum capacity of the by-product ovens in the United States is in round numbers 3,510,000 tons of coke per month, the bulletin states, it will be seen that the industry was operating during the month of June at only 44 per cent of capacity. Of the 81 plants reporting, 10 were closed down entirely. As with active demand an average production of 85 to 90 per cent of capacity is to be expected, it is pointed out that the June output of by-product coke was less than half of normal. The depression is declared to be more significant when the virtual cessation of bee-hive coke manufacture is remembered.

The coal charged in June is estimated at 2,210,000 tons. The normal monthly consumption of the ovens, assuming 85 per cent operation, would be 4,300,000 tons. The by-product ovens therefore were getting along with some 2,090,000 tons of coal per month less than they would be using if business were active.

The monthly output of by-product coke in the United

States in net tons, exclusive of screenings and breeze, is reported as follows:

	Coke Produced	Coal Charged
1917 monthly average.....	1,870,000	2,625,000
1918 monthly average.....	2,166,000	3,072,000
1919 monthly average.....	2,095,000	2,988,000
1920 monthly average.....	2,565,000	3,685,000
June, 1921	1,540,000	2,210,000

Rate Not Unreasonable

WASHINGTON, July 19.—Rates applied on steel ingots from San Francisco and South San Francisco to Seattle, Wash., between Oct. 24, 1918, and June 18,

1919, were not unreasonable or unduly prejudicial, according to an opinion of the Interstate Commerce Commission based on the complaint of the Pacific Coast Steel Co., vs. Southern Pacific, et al.

It is the contention of the complainant that the rate

applicable to castings should have been imposed on the shipments of the large ingots which, though a raw product, took a higher rate than castings. Seventy-three car loads of the ingots were to be forged into ship shaftings and moved on rates of 52.5c. from San Francisco and 55.5c. from South San Francisco. The steel company held that the rate of 44c. on castings should have been charged. The lower rate on castings was due to the competition of ships for business between San Francisco and Portland.

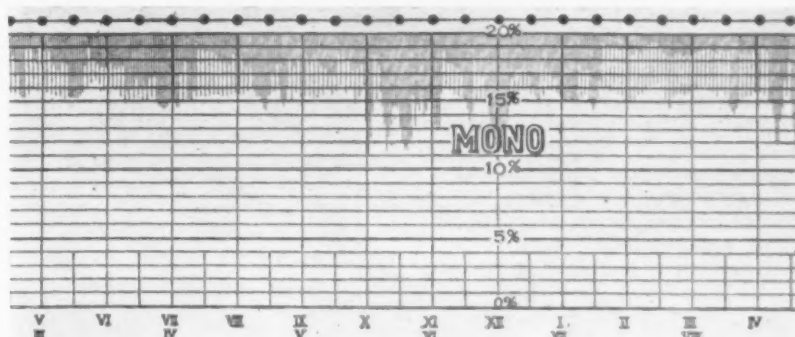
High Wages in Germany

WASHINGTON, July 19.—According to the statistics of the Union of German Metal Workers, the largest trade union in Germany with a membership of 1,600,000, about 63 per cent of these workers are receiving wages which are more than 800 per cent greater than those of 1914. About 36 per cent are receiving wages from 500 to 800 per cent greater and the remainder are receiving wages which have not increased as much as 500 per cent since 1914. The increase in wages in the German metal industry has been set forth in a report made to the Bureau of Foreign and Domestic Commerce by Economist Consul Maurice Parmelee, Berlin, based on figures prepared by a statistical bureau of the union showing wages and cost of living for those engaged in the metal industry. The investigation included not only members of the union but many other workers in the metal industry, so that the report covered 2,300,000 workers. It is stated that it is not possible from the statistics to arrive at an average wage increase for the whole of this group of workers.

The trade unions estimate that the entire cost of living for a family of four has increased about 1550 per cent since 1914, while Calwer's Bureau, a private statistical bureau, which usually makes use of official statistics, estimates that the cost of food alone for a family of four has increased about 1470 per cent since the year mentioned.

C. W. Leavitt & Co., New York, have been appointed selling agents in the United States for Mines de Manganeses, Marquesa-Baja, Chili, producers of high grade manganese ore. New equipment now being installed at the mines will place that company in a position to ship up to 300,000 tons of ore per annum.

The General Fireproofing Co., Youngstown, Ohio, has instituted a general wage reduction of 15 per cent.



The White Space at the Bottom Represents Carbon Dioxide. The lightly shaded areas represent combustible gases.

Labor Costs in Belgium

Hourly wages in the iron and steel industries of Belgium, with conversion into American values at the rate of 7.6c. per franc, are shown in the following table:

Steel Works			
Converters:	Francs	U. S. Cents	
Smelters	3.15	23.94	
Retort hands	3.15	23.94	
Cupola hands	3.05	23.18	
Sheets:			
Heaters	4.17	31.69	
Rollers	4.19	31.84	
Laborers	2.02	15.35	
Stamping and rolling:			
Heaters	3.58	27.21	
Rollers	3.60	27.36	
Hammerers	4.33	32.93	
Open Hearth			
	At Furnaces	Casting	
	Francs U. S. Cents	Francs U. S. Cents	
Founders (melters).....	3.09 23.48	2.42	18.39
Furnace hands	3.05 23.18	2.38	18.09
Laborers	2.75 20.90	2.31	17.56
Boys	1.58 12.01	1.43	10.87
Masonry:			
Masons	2.97 22.57	...	...
Laborers	1.83 13.91	...	...
Blast Furnaces			
	Francs	U. S. Cents	
Founders, maximum	2.50	19.00	
Founders, minimum	2.30	17.48	
Laborers	2.48	18.85	
Overseers	2.38	18.09	
Foundries			
	Francs	U. S. Cents	
Molders	3.00	22.80	
Core makers	3.00	22.80	
Modelers (pattern makers).....	3.00	22.80	
Mechanics	2.70	20.52	
Chippers	2.50	19.00	
Laborers	2.35	17.86	
Apprentices, maximum	1.60	12.16	
Apprentices, minimum	0.50	3.80	
Machine Shops			
	Francs	U. S. Cents	
Turners (lathe hands).....	2.60	19.76	
Planers	2.45	18.62	
Milling machine men.....	2.60	19.76	
Drillers	2.60	19.76	
Borers	2.40	18.24	
Mortisers	2.50	19.00	
Mechanics	2.55	19.38	
Boiler Works			
	Bridge Work	Boiler Work	
	Francs U. S. Cents	Francs U. S. Cents	
Tracers (layers-out)....	2.90 22.04	2.90	22.04
Fitters	2.60 19.76	2.65	20.14
Riveters	2.60 19.76	2.60	19.76
Machine tool operators	2.55 19.38	2.65	20.14
Boiler makers	2.50 19.00	2.50	19.00
Laborers	2.10 15.96	2.10	15.96
Forges:			
Smiths .....	...	2.50	19.00
Stampers .....	...	2.00	15.20
Laborers .....	...	1.90	14.44

*Receive bonus of 35 per cent.

Prices of iron ore used in Belgium are reported to be 18 francs (\$1.37) per ton for 35 per cent ore of Belgian origin, this being the price at the mine. Spanish ore containing 52 per cent iron, for hematite pig, costs 85 francs (\$6.46) per ton. Blast furnace coke has sold since June 1 at 112 francs (\$8.51) per ton.

American Automobiles in Norway

American automobiles predominate in the Norwegian market but English, French, Italian, Dutch and German cars also are offered. Most of the importations during 1918-1920 period came from the United States. American cars owe their supremacy, it is stated, to superior motors, but the European car is less expensive, as a rule, owing to the lower cost of its transportation to Norway. The number of motor cars of all classes in use in Norway rose from 1007 in 1913 to 7915 in 1919, according to a report from United States Consul General Osborne at Christiania. More than 5000 cars were imported in the first eleven months of 1920, and the total number now in operation is estimated at more than 12,000. The distribution among a population of some 2,600,000 is now at the approximate rate of 1 to 216 persons.

In 1918-1920 American manufacturers obtained advance payments before accepting orders, although Norwegian importers objected to this practice. Since the

war, this requirement has been modified, and in some cases ninety day drafts are now being accepted in lieu of cash in advance.

Trucks of the heavier type are not in such demand as the light. Delivery cars of the lighter kind are also preferred.

Steel in New American Ships

Figures of the Bureau of Navigation of the Department of Commerce show that at the close of the fiscal year, June 30, the number of American documented vessels was 28,500, of a total of 18,350,000 gross tons. Comparison is made with the British tonnage of one year before, at 18,330,424 gross tons, comprised in 8561 vessels of 100 tons and over. The American figures include a great many vessels under 100 tons, which would heavily affect the number of vessels, but only slightly affect the total gross tonnage.

American sea-going vessels of 500 tons and over number 3723 of a total of 13,234,401 gross tons. Great Lakes vessels, 2850 in number, counted over 2,625,000 gross tons. This makes a total of 15,859,000 gross tons of large vessels, compared with 7,928,688 gross tons of all vessels in 1914. The increase during the last fiscal year was about 2,025,000 gross tons, or something more than 12 per cent.

This increase, having been almost wholly in steel vessels, must have represented fully 1,000,000 tons of iron and steel, of which perhaps 750,000 tons consisted of plates and shapes. This is more than 10 per cent of the 1920 production of 7,338,420 tons in shapes and in plates 1/4 in. thick or over.

United States Foreign Trade

Preliminary figures for the fiscal year ended June 30 show imports valued at \$3,666,769,537 and exports valued at \$6,519,365,734. This represents a total trade of \$10,186,135,271, which, with the exception of the two immediately preceding years, is the largest on record. Comparative figures are shown in the table. January of this year ended a period of 31 consecutive months during which the exports did not in any month fall below \$500,000,000. December, 1920, ended a period of 22 consecutive months during which the imports did not in any month fall below \$250,000,000. These two stretches of high figures are the greatest, both in duration and in value, which we have ever experienced.

Millions of Dollars, United States Foreign Trade*

Year Ending	Imports	Exports	Total Trade	Export Excess
June 30, 1917.....	\$2,659	\$6,290	\$8,949	\$3,631
June 30, 1918.....	2,946	5,920	8,866	2,974
June 30, 1919.....	3,096	7,232	10,328	4,136
June 30, 1920.....	5,238	8,109	13,347	2,871
June 30, 1921.....	3,667	6,519	10,186	2,852

*Excluding movements of gold and silver.

Decline in German Machinery Exports

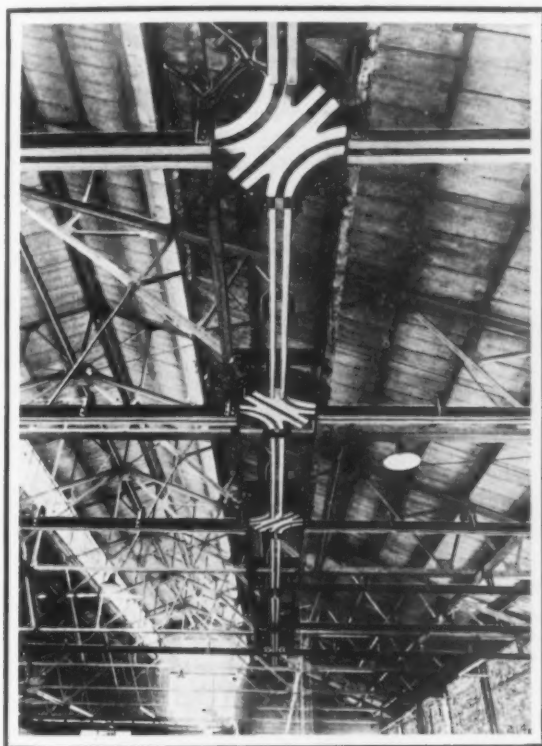
The association of German machine builders (*Verein Deutscher Maschinenbau Anstalten*) held its annual meeting in Berlin June 8. The opening address by Dr. E. von Borsig, according to *Stahl und Eisen*, emphasized the necessity of increasing the export of high priced products, because of the tax burden which had been imposed on export by the peace terms. The annual report showed that in May, 1921, 944 individual firms and 40 branch works representing over 550,000 employees were members of the association. In view of the vital importance of export, the association has, in co-operation with other industrial branches, worked out a preliminary draft for a new tariff, and has already investigated its probable effect in Switzerland, Sweden and Czecho-Slovakia. Since October, 1920, 20,000 export orders have been the monthly average.

The address of Dr. von Borsig showed that the machine building industry now employs 700,000 men. The industry, according to official reports, exported six milliards marks (\$90,000,000) of machine products in 1920, but this year has shown a decrease, with generally poorer business conditions in the industry. The discussion at the meeting bore on the necessity of quality to hold export markets, also of more economic production.

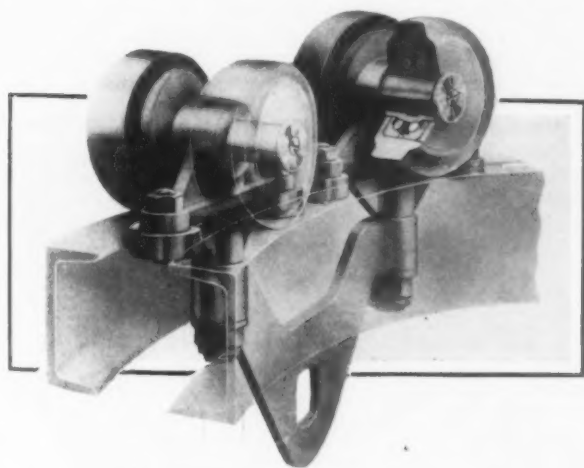
Short-Turn Overhead Trolley System

A short-turn overhead trolley system comprised of tracks, trolleys and switches has been placed on the market by the Whiting Corporation, Harvey, Ill. A section of an installation of the system is shown in the accompanying illustration.

The track, consisting of two parallel standard rolled channels spaced 2½ in. between flanges and held in place by chumps, is designed to carry loads with no intermediate supports except at the splices, corners and switch points and is fabricated to meet the requirements of each installation. Spanning a long span over a driveway, from one building to another, can



Short-Turn Overhead Trolley System. The track has no intermediate support except at the splices, corners and switch points. Trolleys run on the level top of the channel tracks



also be done without intermediate supports by using a heavier section, keeping the channels 2½ in. between flanges but extending down to the depth of the channel.

Right and left 90-deg. switches, right and left 45-deg. switches, and universal switches are part of the equipment. Each corner and switch connection is interchangeable and can be removed at any time and a double or a universal switch bolted in the same place. All of the short turn corners and switches have a track curvature of 18 in., turning the load practically at a right angle, a feature especially advantageous in foundries in getting up and serving a row of brass furnaces or machines close to the wall without losing space by

long sweeping curves. It is likewise adaptable to freight and terminal houses.

The track is equipped with special trolleys having 2, 4, or 8 wheels, ball bearing mounted, and having guide rollers which run between the toes of the channels. The trolleys run on the level top of the channel tracks and are designed so that they can swing in the same 18 in. radius curves.

Electric hoists may be used as well as chain blocks. Binding of the trolleys and the possibility of trolleys running off the track is said to have been effectively eliminated. The sections of track are built and erected as single units, a feature advantageous to low erection costs.

Molding Sand Research

In co-operation with the National Research Council, the American Foundrymen's Association is undertaking an investigation of natural and synthetic molding sands and of the employment of greater proportions of used sands in molding operations; also a study of refractory sands and refractory and plastic clays. The program as laid out at present is:

1. To collect all published information available on these subjects in this and foreign countries. This work is now well under way.

2. To study and formulate by field operations of a practical technical investigator, the practices in the best foundries of the country.

3. To submit all information so obtained to a committee composed of practical foundrymen and technical experts, with a request that this committee formulate suggestions for promising lines of research that might be followed to attain the desired end.

The bibliographies were prepared by the National Research Council. The work of the technical investigator is made possible by funds placed at the disposal of the American Foundrymen's Association for research work.

President W. R. Bean, in a letter to the members of the association, submits a questionnaire the answers to which are expected to be of help to the committee. Members who have been able to get greater tonnage from their sand by special mechanical mixing, by the use of old core and molding sand, or in other ways are asked to give details.

Decrease in Steel Corporation's Orders

Unfilled orders on the books of the United States Steel Corporation June 30 were 5,117,868 tons, compared with 5,482,487 tons May 31. This is a decrease of 364,619 tons and compares with one of 362,737 tons in May, 439,541 tons in April, 649,102 tons in March, 639,297 tons in February and 574,958 tons in January, and represents the eleventh consecutive monthly decrease reported. The unfilled tonnage a year ago was 10,978,817 tons, or 5,860,949 tons more. The table below gives the unfilled tonnage at the close of each month, beginning with January, 1918:

	1921	1920	1919	1918*
Jan. 31.....	7,573,164	9,285,441	6,684,268	9,477,853
Feb. 28.....	6,933,867	9,502,081	6,010,787	9,288,443
Mar. 31.....	6,284,765	9,892,075	5,430,572	9,056,404
Apr. 30.....	5,845,224	10,359,747	4,800,685	8,741,882
May 31.....	5,482,487	10,940,465	4,282,310	8,337,623
June 30.....	5,117,868	10,978,817	4,892,855	8,918,866
July 31.....		11,118,468	5,578,661	8,883,801
Aug. 31.....		10,805,038	6,109,103	8,759,042
Sept. 30.....		10,374,804	6,284,638	8,297,905
Oct. 31.....		9,836,852	6,472,668	8,353,293
Nov. 30.....		9,021,481	7,128,330	8,124,663
Dec. 31.....		8,148,122	8,265,366	7,379,172

The largest total of unfilled orders was on April 30, 1917, when it was 12,183,083 tons. The lowest was on Dec. 31, 1910, at 2,605,747 tons.

The Isthmian Steamship Co.'s vessel, Atlanta City, sailed July 12 from Mobile, Ala., for Darien and Yukow with 5000 tons of steel rails and a heavy tonnage of splice-bars, nuts, bolts and rivets for the Manchurian railroad, cargo coming from mills of the Tennessee company. The Charlton Hall sails July 14 with 5400 tons of steel rails for Seward, Alaska, for the Alaskan railroad. A considerable tonnage of angle bars was also taken. This cargo was also from the Tennessee company mills and is one half of a recent order.

June Steel Ingot Output at New Low

The steel ingot statistics of the American Iron and Steel Institute for June show that 30 companies, which in 1920 produced 84.20 per cent of the total, had an output last month of 1,003,406 gross tons, as compared with 1,265,850 tons in May. The decrease was 262,444 tons, or about 20.7 per cent. Estimating the production of the other companies on the basis of those reporting, the total production of ingots in June was 1,191,693 tons, or 47,667 tons per operating day, counting 25 working days to the month, against an estimated total of 1,503,206 tons, or 57,815 tons per operating day in May. This is a decrease of 311,513 tons or 10,148 tons per day. In the table below the output of Bessemer and open-hearth works is separated and the figures for 1920 by months are included:

Monthly Production of Steel Ingots by 30 Companies Which Produced About 84.20 Per Cent of Total in 1920—Gross Tons

	Open Hearth	Bessemer	All Other	Total
January, 1920...	2,242,758	714,657	10,687	2,968,102
February	2,152,106	700,151	12,867	2,865,124
March	2,487,245	795,164	16,640	3,299,049
April	2,056,336	568,952	13,017	2,638,305
May	2,251,544	615,932	15,688	2,883,164
June	2,287,273	675,954	17,463	2,980,690
July	2,135,633	653,888	13,297	2,802,818
August	2,299,645	695,003	5,784	3,000,432
September	2,300,417	693,586	5,548	2,999,551
October	2,335,863	676,634	3,485	3,015,982
November	1,961,861	673,215	3,594	2,638,670
December	1,687,162	649,617	3,586	2,340,365
Total, 1920...	26,197,843	8,112,753	121,656	34,432,252
January, 1921...	1,591,281	608,276	3,629	2,203,186
February	1,295,863	450,818	2,796	1,749,477
March	1,175,591	392,983	2,404	1,570,978
April	1,000,053	211,755	1,510	1,213,958
May	1,047,810	216,497	1,543	1,265,850
June	808,286	193,644	1,476	1,003,406

The June ingot production was at the yearly rate of 14,824,437 tons, counting 311 operating days to the year. This compares with a rate in May of 17,980,465 tons, of 17,242,773 tons in April, and of 21,258,405 tons in March. The decrease of 311,513 tons in the estimated ingot output of all companies in June from that of May compares with a decrease of 156,388 tons in the June pig iron output from that of May.

Iron and Steel in Four Countries

Comparison in production of pig iron and steel ingots and castings for the United States, Great Britain, France and Belgium may be made, up to the end of May, figures for Germany not being available. The figures shown are all on the basis of monthly averages, giving the averages for 12 months in 1913, 1919 and 1920, for five months of 1921, and the figures for May alone.

Average Production per Month, in Gross Tons

	United States	Great Britain	France	Belgium
1913	2,580,513	855,000	427,000	203,800
1919	2,584,614	617,000	198,000	20,600
1920	3,077,167	667,300	272,100	92,700
1921, 5 months...	1,672,667	313,100*	287,700	97,700
1921, May	1,221,221	13,600*	280,000†	74,600

Steel Ingots and Castings

1913	2,608,406	639,000	385,000	202,300
1919	2,889,269	658,000	179,000	27,400
1920	3,511,078	754,700	242,900	101,300
1921, 5 months...	1,900,000†	282,500*	254,600	97,100
1921, May	1,503,000†	5,700*	250,000†	62,800

*Showing effects of the coal strike. †Estimated.

Steel Employment Still Falling

WASHINGTON, July 12.—Unemployment in the iron and steel industry showed a further decline of 19,701 workers in June, amounting to 5.7 per cent, according to the monthly survey of the United States Employment Service. The number engaged in the iron and steel industry in June was 21.3 per cent of the total reported employed in the 14 groups dealt with. The figures of the Employment Service relate to 1428 firms in 65 principal industrial centers, employing a total of 1,600,000 workers, and show a net decrease of 46,414, or 2.9 per cent on the pay rolls in June. According to these figures, therefore, the decrease in employment

in the iron and steel industry was 42.7 per cent of the total net decline.

Stating that detailed examination of the returns clearly indicate the fundamental causes of the protracted industrial depression and the tide of unemployment, the report says:

"Continued unsatisfactory conditions of transportation, with freight rates in many instances considered almost prohibitive; lack of anything like a normal foreign market; the present low value of farm produce; stagnation in iron and steel; high costs of construction and general dullness of the retail trade stand out prominently as leading factors in the situation."

It is stated that there are indications at some points of resumption of building operations, though for the most part on a restricted scale. Industry generally is declared to be optimistic, and while the likelihood of a dull summer in most lines is fully recognized, the tendency is to count on employment improvement by fall and a healthy, though not spectacular, business revival by the spring of 1922. Twenty-six states scattered over all sections of the country reported employment increases in some lines, while 39 showed decreases in employment for the month of June.

The following table is from the Bureau of Labor Statistics:

Month	(Number of—)	Half-Month	Average	
<i>Iron and Steel</i>	Establish- ments	Payroll	Pay Envelope	
May, 1921.....	119	118,802	\$5,957,985	\$50.15
June, 1921.....	117	111,540	4,896,331	43.90
June, 1920.....	117	184,537	13,989,510	75.81
<i>Automobiles</i>				
May, 1921.....	44	93,296	*3,126,958	33.52
June, 1921.....	47	96,254	*3,154,773	32.77
June, 1920.....	47	154,082	*5,230,496	33.95
<i>Car Building and Repairing</i>				
May, 1921.....	54	39,276	2,545,577	64.80
June, 1921.....	56	37,945	2,515,988	66.31
June, 1920.....	56	64,965	4,084,912	62.87

*Weekly.

Cost of Living Slowly Falling

Wholesale prices declined 2 per cent during June, according to figures of the Bureau of Labor Statistics. The heaviest declines were of 4.35 per cent in metals and metal products and 4.55 per cent in house furnishing goods. Only one group (farm products) is now lower than metals and metal products; one year ago, metals and metal products were lower than any other group. House furnishings are still 2½ times 1913 prices and building materials more than double their 1913 level, although all commodities, combined, show but 48 per cent above 1913 prices. Except for the last line, the following table represents wholesale prices.

Index Numbers of Wholesale Prices, by Groups of Commodities (1913 equals 100)

	1920 June	1921 May	1921 June	(Decline in—)	Per Cent Advance Over 1913
				One Year	
Farm products.....	243	117	113	53.5	90.9
Food, etc.	279	133	132	52.7	82.1
Cloths and clothing....	335	181	180	46.3	66.0
Fuel and lighting.....	246	194	187	24.0	40.4
Metals and metal products	190	138	132	30.5	64.5
Building materials....	337	202	202	40.0	57.0
Chemicals and drugs...	218	166	166	23.9	44.1
House furnishing goods	362	262	250	30.9	42.7
Miscellaneous	247	151	150	39.3	66.0
All commodities.....	269	151	148	45.0	71.6
RETAIL FOOD COSTS	219	145	144	34.2	63.0

Continued rapid progress is being made in the construction of the plant of Durant Motors, Inc., in Lansing, Mich. Flooring work is now being done. Deliveries have been started on 300,000 brick by the Briggs Co. of Lansing, which also has supplied 65 tons of reinforcing steel.

The Stahleisen Publishing Co., Düsseldorf, Germany, publisher of *Stahl und Eisen*, has acquired the publishing rights of *Das Ferrum* which suspended publishing in 1916 on account of the war.

New Portable Arc Welding Sets

The General Electric Co., Schenectady, N. Y., has placed on the market two types of gas engine driven arc welding sets, one for medium, or intermittent duty, and the other for heavy duty. Both outfits are adapted to industrial plants where the work to be done is located in odd places and where installation of permanent equipment is not warranted. Their particular field, however, is in places where electric power is either unavailable or inconvenient or costly to secure, such as marine work, or for welding experts who own their set, and travel about in localities where there is no electric power.

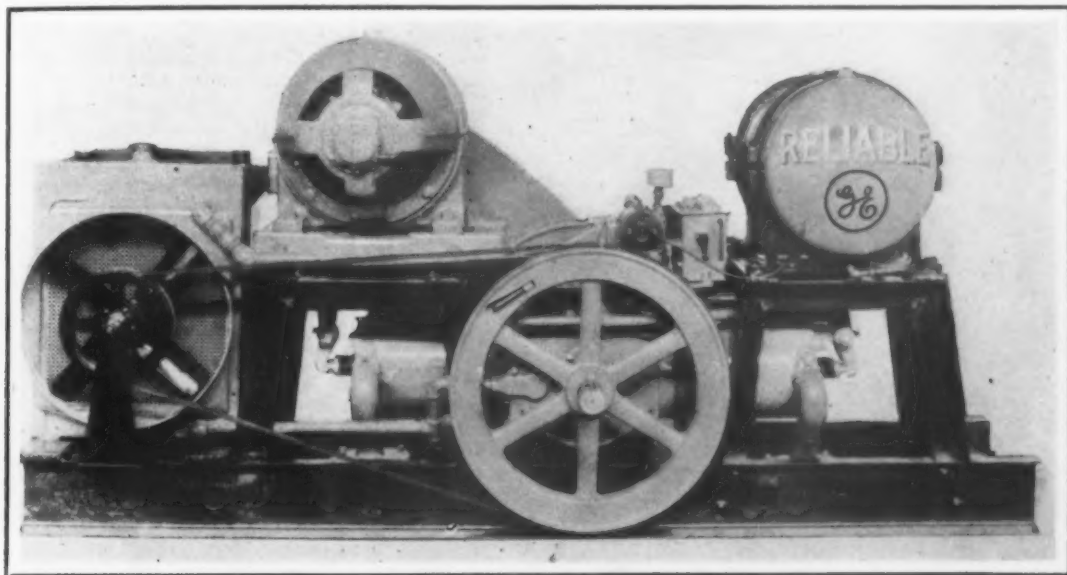
The medium duty equipment was designed particularly for intermittent duty. The generating unit con-

extent it exceeded \$6.50 per car. Reparation is to be made on the basis suggested on 15,448 carloads of coke shifted from the ovens to blast furnaces in the period between June 25 and Sept. 22, 1918.

Great Bridge Proposed

SAN FRANCISCO, July 8.—J. Vipond Davies and Ralph Modjeski, distinguished tube and bridge engineers, have just issued their preliminary report on the proposed structure to join San Francisco and Alameda counties, in which a combined mole, bridge and tunnel are recommended. It is estimated that four years will be required to complete it, at a cost of around \$40,000,000.

The proposed plan involves a tube passing from



The Arrangement of the Various Units of the Portable Arc Welding Set. Compactly Mounted on a Structural Steel Base, Makes It Flexible for Work in Odd Places

sists of a type WD 10-4 kw. 1200 r.p.m., 60-20 volt 200 ampere generator directly connected by a flexible coupling to a Matthews, Model F, 4 cylinder, 4 cycle, 20 hp. gasoline engine. The engine, radiator, generator and welding panel are assembled on a rigid cast iron base, which, in turn, is mounted on wooden skids. The set is 86 in. long, 28 in. wide, and has a net weight of about 2000 lb.

The heavy duty equipment can be arranged to supply either one or two welding circuits. It consists ordinarily of a 20 hp. 2 cylinder opposed Reliable Heer, model 00, gas engine, a type WD 9 generator and welding panel, the whole mounted on a welded structural steel base with a net weight of 2400 lb. for the single-operator equipment and 3200 lb. for the double operator equipment.

Declared a Common Carrier

WASHINGTON, July 19.—The Benwood & Wheeling Connecting Railroad, owned by the National Tube Co., and operating along the Ohio River at Benwood, W. Va., where it performs terminal switching services to and from trunk lines, is a common carrier, according to an opinion handed down last Saturday by the Interstate Commerce Commission. Having been officially given this status, the commission states that the railroad is entitled to receive divisions out of joint rates or absorptions of switching charges under appropriate tariff provisions. The privileges given the road were sought in a complaint it made against the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad, et al.

A finding of unreasonableness and an order of reparation have been issued by the commission in connection with a complaint of the Illinois Steel Co. vs. Elgin, Joliet & Eastern Railroad. The commission held that a rate of \$5 per car plus 15c. per net ton on movements of coke from the ovens to unloading points in complainant's plant at Gary, Ind., was unreasonable to the

San Francisco beneath the bay channel at a depth of at least 40 ft. below mean low water and rising thence to connect with a bridge of 40 short spans; this in turn to be continued to the Alameda shore by a trestle and solid fill. There would be 3500 ft. of tube, 11,500 ft. of bridge, 3600 ft. of pile trestle and 12,000 ft. of fill or mole. The crossing would provide for two railroad tracks and a vehicular roadway through the tube 20 ft. in width. Provision would be made for the future construction of a second tube to meet the bridge, over whose span, as well as on the trestle and fill, the driveway would at once be constructed at a 40-ft. width.

A comparison calibration of the 2,000,000-lb. chain testing machine located at the Boston Navy Yard has been completed using the calibration bar extensometer method. In this case a large 5¼-in. bar of nickel steel was used, the deformation of which was measured by means of a special extensometer. The bar was first loaded in the large Emery testing machine of the Bureau of Standards and the elongation measured for 10,000 lb. increments of load. The bar and extensometer were then taken to the Boston Navy Yard and 6 loadings to 1,000,000 lb. were made in a similar manner. A comparison of the results obtained from the two machines indicated that the chain testing machine was reading about 3.4 per cent higher than the large Emery machine.

To prevent accidents when oiling and repairing crane trucks, as well as to save time and labor, the Illinois Steel Co. has provided safety platforms at its South Chicago works, a platform being located at each end of a crane and attached to the crane girders, according to the *National Safety News*. Formerly temporary scaffolds had to be built, or the men lay across the tracks, serious accidents resulting. The platforms are guarded by railings, toe boards and a center bar. Two or three hours are saved on each job of changing brasses or truck wheels.

Milling Machine Dynamometer

A dynamometer for determining the pressures exerted by a milling cutter on the various working parts of a milling machine, although it is also adaptable for making tests on planers, shapers and with slight variations, drill presses, has been built by the Cincinnati Milling Machine Co., Cincinnati, from the designs of R. Poliakoff. The instrument provides a means for reading the pressures exerted on any milling cutter while at work, in two directions, the readings being taken directly from the dials shown in the accompanying illustrations.

The value of accurate knowledge of the pressures in question to designers of milling machines as well as to designers of fixtures and cutters for use on them

levers are rigid against vertical and cross loads but flexible to horizontal loads, neither system interfering with the action of the other. Guards are provided so that any lubrication or flooding of the cutter may be used.

The working surface of the table is 18 in. long and 10 in. wide and is provided with three T-slots. The height of the working table above the bottom of the base is 8 in. The total size of the base is 35 in. long x 14 in. wide. The dynamometer has the capacity to withstand loads of 25,000 lb. longitudinal, and also loads of 4000 lb. in the opposite direction, vertical downward pressures of 10,000 lb. and upward pressures of 7000 lb.

In offering the instrument the makers point out that its value is not confined to manufacturers of milling machines and milling cutters but is valuable as well for automobile, experimental and other shops where milling operations are studied and given proper attention.

The instrument is also of value to technical schools and colleges, problems attending standardization of



The Vertical Downward or Upward Pressure of Cutter Is Read from Left Hand Dial

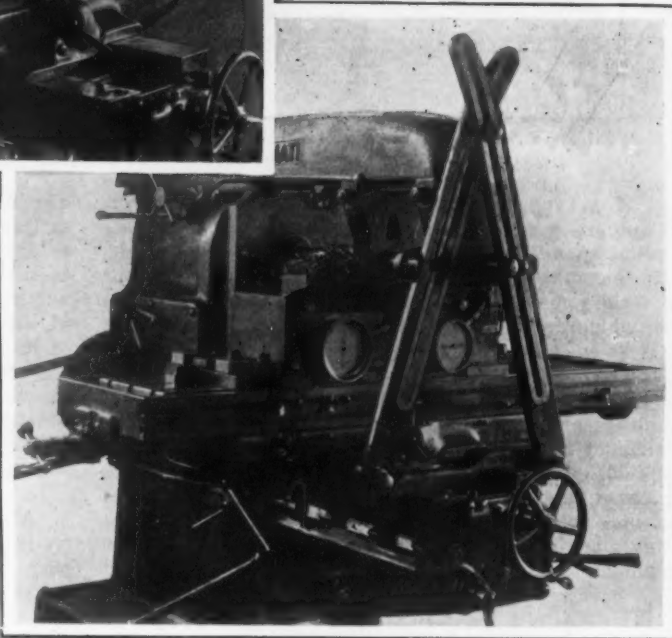
For Crosswise Pressure the Dynamometer Is Mounted as Shown and Readings Taken from Right-Hand Dial

has been long recognized. Accurate knowledge of this kind is also of assistance to designers of machine parts which are to be milled because in the final analysis the pressure of the cutter is first exerted on the piece itself and transmitted from it first to the fixture and then to the milling machine. In determining these pressures the makers state that the Poliakoff dynamometer has proved accurate and reliable.

The dynamometer is shown attached to a milling machine taking a heavy cut in steel. The vertical downward or upward pressure of the cutter is read direct from the left hand dial, the longitudinal pressure from the right hand dial. If it is desired to obtain the crosswise pressure, i. e., the pressure in line with the machine arbor, as for example the end-thrust pressure of a spiral milling cutter or a face milling cutter, the instrument can be mounted crosswise on the table and readings taken from the right hand dial.

The instrument consists of a working table supported by a base plate which is in turn bolted to the table of the machine. The work platen is supported at each end by a wide Emery plate fulcrum, their lower ends resting on two levers which carry a definite portion of the vertical load on the platen to a hydraulic chamber placed centrally under the work table. The hydraulic chamber is connected with the left hand gage which is graduated by trial in terms of the vertical load in pounds.

The horizontal load is transmitted through bars which are flexible vertically to the crosshead which in turn transmits the load to the hydraulic chamber. Heavy springs are used to put initial loads on each chamber so they will show loads in either direction. The Emery plate fulcrums carrying the loads to the



machines and cutters being more readily solved with its aid.

The Apex Motor Corporation, Ypsilanti, Mich., is looking about for a suitable plant to be used for the manufacture of motors, to be used in the production of the Ace motor car, which is manufactured by the company. The present capacity is only 50 motors a week, but this is to be increased. The company would like to purchase a plant building already erected.

The Motor and Accessory Manufacturers' Association will hold its 1921 credit convention in Detroit on Sept. 14 to 16, at the Hotel Statler. Detroit was selected because of its convenient location to the 400 parts manufacturing concerns affiliated with the association. It is planned to bring to the convention speakers of national importance in the automotive industry, banking, industrial and government circles.

Objects to Giving Information on Costs

Federal Trade Commission Indicates Informally Its Position in Regard to Furnishing Statements of Facts to Members of a Business Association

WASHINGTON, July 19.—Supplying by trade associations of information to its members relating to manufacturing costs and lists of given work, showing costs, based on tests in plants of members, is looked upon by the Federal Trade Commission as being a means to lessen competition "and to restrain trade, even to create monopoly."

The attitude of the commission was made known in a letter written by Acting Chairman Nelson B. Gaskill of the commission, made public yesterday, in reply to a letter received from F. J. Moss of the American Sash & Door Co., Kansas City, who had asked for an opinion as to the legality of the formation of the proposed Millwork Cost Information Bureau. The reply of Mr. Gaskill is exceptionally interesting and is important in view of the attitude of business interests generally and many Government officials, including Secretary of Commerce Hoover, who have expressed the belief that the commission should be given authority to make rulings in advance as to legality of trade association so as to do away with uncertainties as to their standing in law. The commission is opposed to the granting to it of such authority, as has been stated by Chairman Thompson, who was quoted recently by THE IRON AGE on this matter. The willingness of the commission, however, to give a statement on the subject as to the general principles involved, but with the distinct understanding that it is merely an informal opinion, is made plain by the reply of Mr. Gaskill to Mr. Moss and has come as something of a surprise. It had been doubted that the commission would even attempt to give an informal opinion. The reply therefore is accepted as establishing a new policy of the commission which may be far reaching in character and act as a guide for performances of trade associations and perhaps revision of present practices, even though the Gaskill reply specifically does not commit the commission to any stated policy that would establish a precedent. But with a set of general principles and in "proper cases," as the Gaskill letter indicates, business interests apparently will be given co-operation by the commission to the extent of its ability. The Gaskill letter, therefore, is considered to be a valuable contribution to the subject involved and definitely gives the views of the commission toward the educational work of trade associations in connection with cost accounting, despite the fact that the commission has no legal power to approve or disapprove of such projects as that named by Mr. Moss while in its present stage.

Doubt as to Legality of Bureau

"Its opinion in the matter must be apparent," Acting Chairman Gaskill points out, after stating his serious doubt as to the legality of the proposed bureau. "One thing is sure. If you do not publish a uniform cost list nor endeavor to educate your membership to the use of a standard cost, you will so far as this subject is concerned, be within the law."

In substance the commission, the pioneer governmental organization to urge adoption of a uniform system of cost accounting for business interests of the country, holds that the proper function of a trade association is to educate in proper methods so that the member may know as accurately as possible and compete with knowledge of his own business. But its desirable purpose, so far as the public good is concerned, stops there, and it is for each member to make his own price list and not for an association to issue to members price lists, costs, etc.

Mr. Gaskill points out to Mr. Moss that Congress purposely struck out of the law the power to make authoritative rulings so as to remove in advance legal uncertainties of proposed cost accounting associations.

"The commission is desirous of co-operating with business, however," Mr. Gaskill states, "and in proper cases, where it can by the expression of what is merely an opinion stated in general principles, contribute to the elimination of legal uncertainties, does not hesitate to do so. The application of these principles, however, to particular cases as they arise, must depend upon the facts adduced in the particular case. And the expression in such a letter as this is not to be construed as a judgment in any particular case."

Proposal to Incorporate

"It seems from your letter that the Millwork Cost Information Bureau is a group of planing mill houses which submit to a central agency their actual costs on completed products from which average or standard costs are computed. There is compiled and published a book containing the items or products and their costs for the use of estimators in planing mills."

"Sample pages submitted show such captions as the following:

"'Flush doors—Veneered' and after specifications the following: 'Basis list price per square foot. Figure square footage—breaking on 2 in. each way, at the following prices, and add for each door, \$2.50.' Then follow prices for different size doors of different woods."

"You now propose to incorporate 'Millwork Cost Bureau' and your proposed charter among other purposes states that the bureau is to furnish from time to time information to its members relating to the manufacturing and distributing costs of various kinds of mill work . . . to supply its members with suitable schedules or lists of mill work, from time to time, showing the cost thereof, based on tests made in the factories of its members."

"You state in your letter that this list is subject to such discount as a member may see fit to apply."

"The issue of this list seems to be open to question because of its tendency to induce those who use it to disregard their actual and individual costs and to adopt a standard or average which does not relate to their business and upon this uniform basis, to add the margin. The result is a trend toward uniformity of selling price and the lessening of competitive sales on the basis of efficiency. The effect might be—in the absence of an ability to forecast consequences, we cannot say it will be—to characterize the bureau as a combination to lessen competition and to restrain trade, even to create monopoly."

"One of the most valuable functions of a trade association is education in proper methods of cost accounting so that the member may know as accurately as possible and compete with knowledge of his own business. He must make its own prices. And any concerted effort to substitute for the individual's actual cost what may be to him a highly arbitrary and uniform cost basis, seems to be a dangerous misuse of the bureau's processes. It takes away the necessity for individual cost accounting by creating an arbitrary cost standard. It deprives the efficiency of the competitive advantage which efficiency gives and tends to raise the selling price to the consumer. Furthermore, the pressure toward the arbitrary use of standard costs disregards the fact that these costs vary continuously not only with the several mills but with the whole industry, and that those changes cannot be reflected to the consumer under the uniform cost list as promptly as by the individual producers each working from his own mill."

In a terrific wind and rain storm which struck Sault Ste. Marie, Ont., July 13, No. 1 ore bridge of the Algoma Steel Corporation was blown down, causing damage to the extent of \$300,000.

Air-Operated Forging Hammers

The experience of a steel mill in Italy with air operated forging hammers has been reported by the Chicago Pneumatic Tool Co., New York. Although the cost of coal in the United States was far below coal prices prevailing in Italy at the times the figures were compiled, the following data may prove interesting from a comparative standpoint.

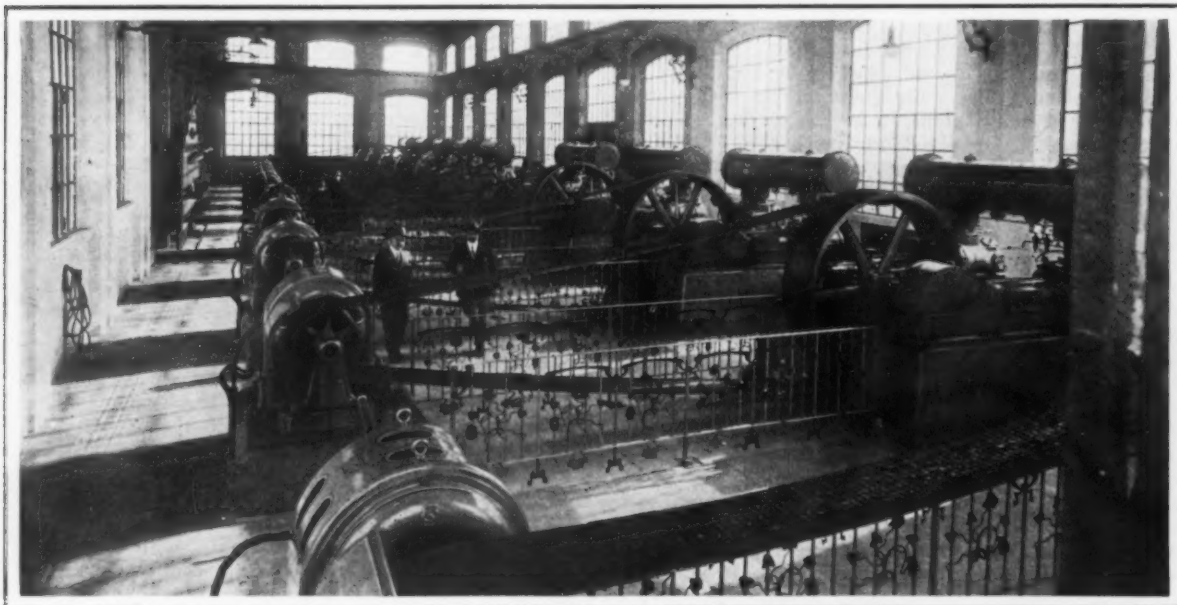
<i>Air Operated Hammers</i>	
New plant cost, including buildings, air compressors, and motor transformers	Lire 1,200,000
Electric energy consumed (hydro-electric supply) 1500 kw. for 300 days of 8 hr.	276,000
Labor, 2 men (1 electrical, 1 mechanical) @ 20 lire per day	12,000
Water (circulation), 432 cu. m. per day	13,000
Maintenance	20,000
Lubricating oil	36,000
Depreciation of plant	100,000
Annual cost	457,000
<i>Steam Operated Hammers</i>	
Boilers had heating surface of 11,250 sq. ft. (1050 sq. m.)	
Consuming 28 gross tons per day—8500 tons per annum @ 300 lire per ton	2,550,000
Labor, wages of 22 firemen @ 20 lire per day	132,000
Water	2,500
Insurance and maintenance of boilers	36,600
Maintenance of steam hammers	40,000
Annual cost	2,765,500

Whether such economies can be effected in other

Will Confer with Trade Organizations

WASHINGTON, July 19.—Following a conference between Secretary of Commerce Herbert Hoover and President John E. Edgerton of the National Association of Manufacturers, Director of the Census William M. Steuart has asked the association to assemble a conference of representatives of trade and craft organizations to discuss the manner and methods of carrying out Section 32 of the Census act of March 3, 1919, by "such schedules as in his judgment may be necessary" to collect and publish for the year 1921 "statistics of the products of manufacturing industries." Secretary Hoover has also given directions to the Director of the Census to collect current commodity statistics under the provisions of Section 8 of the act of Congress of Feb. 14, 1903, which authorizes the secretary to make such special investigations and reports "which he, himself, may deem necessary and urgent." The primary design of this conference, the association has announced, is to determine the character and form of the schedules to be used in the collection of the census of 1921, which work begins Jan. 1, 1922, and to relate such work to the collection of such current commodity statistics as are desired by the Secretary of Commerce and which may be useful to the industries of the country.

The conference will be of the same general character as that assembled by the National Association of Manufacturers at the invitation of the Director of



Nine Chicago Pneumatic Belt-Driven Air Compressors Installed in an Italian Steel Mill for Supplying Air to Forging Hammers

steel mills is a matter depending, it is pointed out, upon the abundance or scarcity of coal as a fuel, the size of the steel mill, the distance from the source of power to the forging hammers operated, labor costs, manufacturing methods, etc.

At the July meeting of the Pittsburgh section of the Industrial Cost Association, Morgan B. Schiller, American Foundry & Construction Co., Pittsburgh, gave a graphic talk on "Practical Cost Problems," in which he outlined a cost system for a steel pipe plant, with special reference to the matter of determining the machine hour rate, and problems of depreciation. At the August meeting of the local section, the question of "Idle Plant Facilities and Handling Abnormal Overhead Expenses," which has been under discussion at the meetings of the section for the past three months, will be voted upon.

The Hinkley Motors Corporation, Detroit, has purchased seven and one-half acres in Ecorse, Mich., a down river village adjoining Detroit, on which to build a plant. Plans have been drawn and the excavating work has been started.

Census in 1919 and which proved of such value as to call for commendation of the director in the annual report for the year 1920.

President Edgerton will promptly issue a call for the conference which, it is stated, may result in the working out of a method of direct co-operation between trade and craft organizations with the Bureau of the Census, whereby they may collect for and on behalf of the census and themselves the figures relating to their industry and improve the legitimate activities of such organizations, particularly as related to statistical work. It is expected that the Bureau of the Census will bring to the conference tentative forms and schedules for discussion by the representatives of organizations assembled.

Wage reductions were put into effect last week by the Central Iron & Steel Co., Harrisburg, Pa. The reductions, in every case, brought the rate down to the scale now being paid by the Bethlehem Steel Co. The rate for common labor was reduced from 32c. to 27c. an hour, and adjustments were made in the payroll of all department employees. Every employee is affected by the reduction, officials have announced.

Courts Liberal to Injured Workmen

Loss of Use of Members As Well As Loss of Members Being Compensated Under Workmen's Compensation Acts

—BY CHESLA C. SHERLOCK*—

THE workmen's compensation acts, among other things, provide relief for an injured workman who has sustained injuries in the course of his employment which cause the "loss" of a member such as finger, hand, arm, toe, foot or leg, or any appreciable portion thereof.

These injuries are technically known in the compensation service as "scheduled injuries" for the reason that they are specifically set out in a schedule incorporated in the acts themselves, which define down to the penny the actual amount of compensation which an employer owes to a workman for a certain specified loss.

It should be kept in mind by employers that the acts impose liability upon them because the workman has suffered a loss in earning capacity. In all cases where there is not a clear schedule injury the burden of proof is upon the workman to show that his earning capacity is, in fact, impaired or lost beyond recovery.

But in the case of scheduled injuries, as where a workman loses a finger, the law steps in and presumes that the workman's earning capacity has been impaired to the extent specified by the law, and the employer must pay this compensation regardless of whether the loss of that finger has in any way impaired the workman's usefulness in the particular employment. Proof, then, is beside the question, for the presumption of the law is greater than the fact in the case.

Distinction Between "Loss" and "Loss of Use"

Ordinarily, we might mention the schedule of injuries in the average compensation law and pass on. Anyone could look up the schedule and determine in a few seconds' time just where he stood, but the courts have only recently commenced to draw a new construction around this point in the law. They have, in fact, come to a new idea in the matter, and instead of compensation wholly along the old line of the "loss of a member," they are commencing to draw a distinction between "loss" and "loss of use" of the member, which seems to be so far-reaching in its effect upon the employer's liability that an extended examination of recent decisions seems advisable.

A workman in Connecticut had lost two phalanges of a finger and had been incapacitated for three months following the injury. The Connecticut court said: "The word 'loss' is used in the sense of deprivation. It designates the handicap under which the employee will suffer in the future. Compensation is based upon this loss. It is not measured as are the other injuries resulting in partial incapacity by impairment of earning power. Each class of injuries results in partial incapacity, but the compensation for each is based upon a different theory. To support the respondent's claim, 'loss' in some cases must be construed to mean disability, and in other cases disability plus deprivation. These two classes are distinct classes of partial incapacity. *There is no reason why an injury under each class should not be compensated*, and, if the injuries in question be as the respondent insists, the loss of the use of the two phalanges and the loss of two phalanges, these are two independent injuries for each of which compensation is provided, measured as to amount and duration. The loss of two phalanges carries a named compensation, and the loss of the use of two phalanges carries a similar compensation. *There is nothing in the act which prevents compensation for any number*

of several injuries specifically provided for. Payment for one does not pay for any but the one injury. And if there has been a partial incapacity followed by the loss of a member, there is nothing in the act which forbids the award of compensation for each. And whether the loss of a member follows an injury to a member resulting in a loss of its use or follows an injury to some other member, is quite immaterial; the injuries are equally distinct."

Formerly, the courts made no distinction between "loss" and "loss of use" of injured members so far as awarding compensation for each as a distinct injury was concerned. It was recognized, however, that where there was a total loss of use of a member that it amounted to the same thing as if the member had been amputated, and compensation was then awarded on the basis of loss of the member.

In one instance that came under my personal attention, where the incapacity of a workman who had suffered an injury to his right foot, exceeded the statutory limitation fixed for loss of the foot, he was awarded additional compensation, not for loss but for partial incapacity, as the best medical evidence available testified that in time he would regain the use of the foot. But, at that time, this decision was considered revolutionary and in contravention of the expressed intention of the law and the employers raised a great racket about it.

Double Compensation to be Awarded in Future

The compensation theory is extending its influence every day, and there can be no getting away from the fact that the above decision, and those quoted later, mark a new milestone in the employer's liability under that theory. It means that double compensation, so far as we have previously understood the compensation law, is going to be awarded in the future for what looked like, under the old way of looking at things, as only a single injury.

In a New York case it was shown that the injured workman had suffered the loss of the index, second and third fingers, and the fourth became stiff and practically worthless. Compensation was allowed for the specific injuries and later the industrial commission made an award for the loss of use of the *hand*. The employer contended that the commission was without power to make more than the awards specifically provided for by the New York compensation act for loss of fingers. The Appellate Court affirmed the award.

Many times commissions have said that the mere fact that an injury incapacitated a man from doing his regular employment did not entitle him to extra consideration. If he could work at all, in any kind of employment, even though foreign to his trade or calling, that fact was taken into consideration and compensation adjusted accordingly. Thus machinists who lost one hand were deemed capable of running elevators or other similar light work, and the probable earning capacity they might have in other fields of endeavor was taken into consideration in arriving at a basis for an award.

The compensation laws clearly draw a distinction between the loss of fingers and the loss of a hand. The practice, however, is growing to allow compensation on the basis of a loss of the hand where the fingers are gone or rendered useless.

A hand may not be worth much if the fingers are gone; still a workman who has the palm intact is considerably better off than the workman who loses the hand at the wrist, as the acts seem to contemplate in the scheduled compensation awarded. Then, again, a

*Writer on workmen's compensation and industrial law, Des Moines, Iowa.

workman may be injured so that all the fingers, even though intact, are rendered stiff and useless. He might be better off had the fingers been amputated. To say that he should receive compensation only for partial disability would not be just to him nor just to the employer. Such a case inevitably forces the impartial mind to the admission that there is some ground for the wider latitude the courts are giving the commissions in respect to "loss" and "loss of use."

In a New York case the industrial commission found that the workman had lost "all the fingers of his left hand except his thumb, and including the entire metacarpal bones of the middle, ring and little fingers, and the major portion of the metacarpal bone of the index finger, thereby removing the entire palm from the hand," by reason of which the loss of use of the left hand occurred. Judgment was affirmed by the Appellate Court.

Loss of Principal Fingers Equivalent to Loss of Hand

In another New York case the workman lost the first, second and third fingers of the right hand and the first phalanx of the fourth finger. It was agreed that the loss was equivalent to the loss of the hand, "from a vocational point of view."

Said the court: "The fact, if it existed, that the injuries barred the claimant from the employment or the particular occupation or vocation he was engaged in where he received them does not, in and of itself, tend to prove that the hand or the use of it was lost. It is not within the letter or the spirit of the law or the legislative intention that an injury to a hand or member of an employee incapacitating him for a particular employment should establish that he was incapacitated for employment permitting or involving the use of the limb or member as injured. It is a matter of common observation and knowledge that a hand, arm, foot or leg incompetent, through injury, for certain employments is competent and useful for other employments. The expressions 'loss' and 'loss of use,' as used in the law, should be given their unrestricted and ordinary meaning. In the case at bar, the hand, or the use of it, was not lost, provided it could fulfill, in a degree fair and worth considering, in any employment for which the claimant was physically and mentally fitted or adaptive, its normal and natural functions."

"In case the hand was destroyed by amputation, directly or indirectly, caused by the injuries, to such an extent that it could not thus fulfill its natural functions, it was, within the purview of the law, lost. While the loss of a hand naturally involves the loss of use of it, and the loss of use of a hand does not involve the actual loss of the hand as a physical member, a distinction the law recognizes and observes. The question here is whether the first or second rate of compensation should be awarded. The uncontradicted evidence established that the hand was not lost and that the first rate should be awarded."

In a case involving fracture of a leg the court held that the fact that the plaintiff had sustained a compound fracture of the leg between the ankle and knee does not create a presumption that he has permanently lost the use of the member, but that the burden is upon him to prove it.

"A permanent loss of the use of a foot," said the court, "was not shown under the Workmen's Compensation Act, as a result of the compound fracture of the lower leg; was not shown where the testimony of physicians differed as to the extent of the disability, and it appeared that the claimant had some use of the foot, although he would be unable to continue his former occupation of house painting."

A question naturally arises as to what extent the law may be construed as forcing men injured in the course of their employment out of that employment in order to seek some means of livelihood. While it would not appear just to compel the employer to pay compensation in such a case as this one for permanent disability where some use of the injured member still remains; on the other hand, the fact that the loss of use, although not sufficient to amount to a loss, in fact drives a man out of his trade, is coming in for some recognition at the hands of the courts.

The workmen's compensation acts, as we have repeatedly pointed out in these discussions, seeks to share the loss occasioned to a workman in his earning capacity by reason of the accidental injury. If an accident forces a workman out of his chosen trade or calling permanently, even though it does not deprive him of the total efficiency of a limb, he certainly ought to come in for more consideration and a more liberal award than in the case of a man similarly injured but who has not been forced to give up his occupation or trade.

Cases Pertaining to Loss of Vision

It is interesting to note an Illinois case, where a workman, while wiring an automatic staple machine, was injured by a piece of wire flying from the said machine, striking his eye so as to destroy the crystalline lens. He could, as a result, only distinguish light and moving objects. It was held that there was a complete destruction of vision in that eye.

In another case, however, loss of 80 per cent of the vision in one eye was not considered as a total loss of vision. Said the court:

"Here the claimant can make use of the sight remaining in his right eye in many ways. He may not be able to follow any vocation which requires reading or other relatively fine work, as the evidence is, but he can pursue some calling similarly situated to that in which he was engaged when injured."

There can be no hard and fast rules for the determination of cases under the compensation acts, for the simple reason that these cases, in their very nature, defy classification. Each case must be decided "by the facts and circumstances immediately surrounding it," by the application of principles rather than by the application of precedents.

But the trend of the courts is changing on the question of loss and loss of use, and that means that the decisions of cases involving this point in the future are going to change. The trend is toward the broader and surer ground, not because there is a looser conception of the employer's liability, but because simple justice demands it.

Tractors Again Reduced

The International Harvester Co., Chicago, has announced a further reduction in prices on all sizes of tractors, in anticipation of the fall plowing season. The reductions range from \$100 to \$200 and constitute the second cut made this year. The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has made a reduction of 10 per cent on practically all motors and motor control apparatus. This is the second 10 per cent cut in motor prices this year.

Pig Iron in New South Wales

WASHINGTON, July 19.—Increased production of pig iron in New South Wales is reported by the Mines Department for 1920, according to advice received by the Bureau of Foreign and Domestic Commerce. The total production was 26,096 tons, valued at \$3,181,939, which represented an increase of 5155 tons, valued at \$974,649, over 1919.

Erroneous impressions appear to prevail as to the functions of the Bureau of Standards, Washington, as indicated by requests that certain devices be tested by the bureau and placed on its "approved list" for such appliances. Because of this apparent impression, the bureau has issued a statement pointing out that it does not have any regulatory function. In other words, it has no police power and while it might issue an approved list of appliances, such a list would not in any way be binding.

The California Metal Trades Association announced on July 15, a wage reduction effective Aug. 1, affecting approximately 50 classes of workers and averaging 10 per cent less than the wage scale now in effect. More than 25,000 men in the shipyards and other industries will be affected.

CONTENTS

Disposing of Scrap Systematically..... 125

Crompton & Knowles Loom Works Makes Discarded Material Over into Useful Articles — Scrap Committee Formed

Explosion Hazard and Its Prevention..... 127

Analysis of Fuels and Other Combustible Materials, with Special Reference to Powdered Coal

Percentage of Defective Castings Too High..... 131

Losses Could Be Prevented by Proper Study of Human Factors—Responsibility of Purchasing Department

Production and Uses of Cold-Drawn Steel..... 135

Annual Output Estimated at 900,000 Tons — Automobile Field Largest Consumer

Objects to Giving Information on Costs..... 143

Federal Trade Commission Indicates Its Position Regarding Furnishing Statements to a Business Association

Courts Liberal to Injured Workmen..... 145

Loss of Use of Members as Well as Loss of Members Being Compensated Under Compensation Acts

Only Minor Changes in Metal Schedule..... 153

Despite Attacks, Ferromanganese Tariff Rates Were Adopted by House — Bill Will be Passed Thursday

Steel Makers Oppose Duties on Manganese..... 155

Free Ore Urged with Conservation of Domestic Supply — Ferromanganese Duty Could be Lowered and Still be Protective.

Kinney Tapping-Hole Shield.....	126
Electrical Machinery Census.....	130
Blast Furnace Carbon Monoxide Not Harmful.....	130
Wage Reductions.....	130
Freight Rates.....	132, 137
Labor Notes.....	133, 136, 140
Steel Shipments to Canada.....	134
United States Copper Production.....	136
Combustible Gas Recorder.....	137
By-Product Coke Production.....	137
Wages in Germany.....	137
Labor Costs in Belgium.....	138
Foreign Trade Notes.....	138, 152, 157, 170, 173
Steel in New American Ships.....	138
Short-Turn Overhead Trolley System.....	139
Molding Sand Research.....	139
Steel Corporation's Orders.....	139
June Steel Ingot Output.....	140

Iron and Steel in Four Countries.....	140
Cost of Living Statistics.....	140
Portable Arc Welding Sets.....	141
Milling Machine Dynamometer.....	142
Air-Operated Forging Hammers.....	144
To Confer with Trade Associations.....	144
Editorials.....	148
Wage Rates and Commodity Prices—Machine Tool Improvements—Steel and Other Outputs—Value of the Dollar—Electric Steel Last Year	
Correspondence — Cancellations and the Large Stocks of Steel.....	151
Welfare for Workers.....	170
New Model of Revolving Crane.....	175
Book Reviews.....	176
Trade and Office Changes.....	177
Industrial Finance.....	178

Iron and Steel Markets..... 158

Comparison of Prices..... 159

Prices Finished Iron and Steel, f.o.b. Pittsburgh..... 171

Non-Ferrous Metal Markets..... 172

Personal Notes..... 174

Obituary Notes..... 175

Machinery Markets and News of the Works..... 179

New York Jobbers' Prices..... 186

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EDITORS:

A. I. FINDLEY

WILLIAM W. MACON

GEORGE SMART

CHARLES S. BAUR, *Advertising Manager*

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Wage Rates and Commodity Prices

When the world makes progress through the adoption of improved methods and appliances in production, people are entitled to receive more in commodities for the service they render. How the matter is expressed in dollars is merely a detail. If one works with the same energy and ability as his father displayed, and the father was able to buy a bushel of wheat with the proceeds of a day's labor, the son should be able to buy more than one bushel. If he does not want more than one bushel he can spend the extra money on a phonograph record, something the father did not get. The rule applies only as improvements in production occur, only as there is an increase in efficiency in converting service into commodities.

It is impossible, in general, to secure higher wages or larger salaries, measured by what the remuneration will purchase, in any other way. Some agitators have preached that "capital" should divide more with labor. The difficulty, or rather impossibility, about that is that what capital gets or is able to retain is so small in proportion to the total salaries and wages paid that to take a larger percentage from what capital has hitherto retained would add only a small percentage to the wages and salaries.

Investigations made by Dr. Ralph G. Hurlin, statistician of the Russell Sage Foundation, have carried index numbers of commodity prices in the United States back to the year 1810, and average wage rates of common labor and five classes of artisans back to 1820. These presentations enable one to see whether the rule has worked out and which has varied in dollar value, the wages or the commodities. Cutting out the period of fancy prices just after the war of 1812 and the similar period of the past few years, or in other words making the comparison approximately between 1820 and 1910, commodity prices declined a very few per cent while wages nearly tripled. A week's wages would buy about three times as much of the representative commodities in 1910 as in 1820. The increment was not of course perfectly steady

during the period, but it was moderately uniform.

The period is so long that there must be something important in the showing. The greater reward for services is due to productive methods and appliances being improved. It cannot be due to employers giving their employees three times as big a share in 1910 as was done in 1820. The practical question now is whether much progress in methods and appliances, or in efficiency, has been made in recent years, and the next question, seeing that the answer to the last question cannot be very encouraging, is how much progress can be made in future.

While the general or average rate of compensation, in the form of salaries and wages, cannot vary greatly from a standard when measured by purchasing power of the money received, there can be rearrangements between classes of employment. It might be that in 1914, after paying for food, etc., the coal miner could buy more phonograph records than the railroad engineer, but that in 1922 the railroad engineer could afford to buy the larger number of records, or vice versa. That changes in the division between workmen are probable is suggested by the fact that the men who do the least work in a year, such as coal miners and bricklayers, have been receiving particularly high rates per unit of work. As we are passing into a period of years of hard work all around, modifications in distribution among classes of workmen are to be expected.

A very interesting point shown by Doctor Hurlin's wage investigation, already cited, is that in a whole century the ratio between common labor and skilled labor (five classes—carpenters, house painters, machinists, blacksmiths and compositors—being taken) remained practically constant, at 100:180. Great changes in industry, in immigration and other things occurred in that century, hence it is a reasonable inference that a human element is involved, for all other things have changed. Most recent cases of particularly high wages being secured by one class or another of so-called "skilled" labor can be identified as cases in which it was found that the particular service involved could be made a commodity, and a sort of trust formed for the commodity—as with coal mining, bricklaying or holding a job under the

"national agreements" of the railroads. Such trusts need to be broken up for the benefit of wage earners in general.

Machine Tool Improvements

Contrary to a belief expressed now and then in recent months, it does not appear that we are on the threshold of epoch-making departures in machine tool design. To be sure a new grinding machine doubling previous capacity is one development, and a gear hobbing machine which all but thinks has been created, but instead of many new and wonderful things being about to burst upon the machine tool world, we are simply in the midst of unusual activity in the refinement of design, consequential though this is. The improvements are being carried along more or less conventional lines, but they are important not alone in the promise of greatly increased efficiency but, so far as the machine tool builders are concerned, in giving them an outlet for their manufacturing facilities, in that it will pay many metal-working establishments to scrap old equipment and purchase the new.

Unsold stocks of machine tools will come under the handicap of competitive machines equipped for greater output and they will undoubtedly be disposed of largely on the basis of long time credits, particularly for export where such accommodation is demanded. Such seems a likely way of liquidating the accumulations, in that the home market will be confined for some time to replacements based on the increased efficiency of the new tools.

The betterments which designing departments are expected to offer are in part as follows: Greater accuracy, this in many cases meaning greater rigidity. Better lubrication, preferably of an automatic character. Elimination in the notably powerful tools of the excessive physical endurance sometimes required of the operator. So far there is still a clinging to expensive grades of material where that is not always necessary; but keen competition may modify the tendency. Large plants conspicuous for mass production will continue to be supplied with single purpose machines. All in all, machine tool builders are showing what recent months of survey, analysis and investigation are doing toward getting their business on a healthy basis.

Steel and Other Outputs

Some statements concerning the rate of pig iron and steel production in the United States have given an exaggerated idea of the existing depression, unparalleled as it is. In June some published estimates put the activity at iron and steel works at about 20 per cent of capacity. Pig iron production last month averaged 35,494 gross tons per day, equivalent to a yearly rate of 12,946,310 tons. That figure is 32.8 per cent of the greatest year's output of pig iron—39,434,797 tons in 1916—and 25.8 per cent of the country's theoretical blast furnace capacity—50,222,400 tons—shown by the American Iron and Steel Institute at the close of 1919—a capacity much beyond pos-

sible attainment in output under practical working conditions.

The steel ingot production in June, as indicated by returns from 30 companies, was at a rate equivalent to 14,824,000 gross tons for a year of 311 working days. This is 34 per cent of the greatest output of steel ingots—43,619,200 tons in 1917—and 27 per cent of the country's theoretical capacity in open-hearth and Bessemer steel, as given by the American Iron and Steel Institute—54,250,760 tons at the end of 1919, a figure, like that for pig iron, well beyond attainment, with due allowance for repairs and breakdowns and the unbalanced relation of connected rolling mill capacity.

In this connection it is interesting to note the estimates prepared by the Federal Reserve Bank of New York, covering not only the production ratios of pig iron and steel ingots, but also of anthracite and bituminous coal, cement, cotton, sugar, flour, wool and the slaughtering of meat. In each case the figures given show the percentage which each month of 1921 bears to the average for the corresponding months of 1919 and 1920.

Commodity	Jan.	Feb.	March	April	May	Aver.
Anthracite coal mined	103	137	122	118	100	116
Bituminous coal mined	88	85	75	80	86	83
Cement production . . .	88	92	115	121	112	106
Cotton consumption . . .	64	83	87	78	85	80
Wool machinery active	46	79	91	96	104	85
Sugar meltings	56	73	117	87	79	82
Wheat flour milled . . .	76	82	95	100	89	88
Meat slaughtered	84	99	96	100	93	94
Pig iron produced	77	66	49	46	46	57
Steel ingots produced . .	73	63	53	50	53	56
Average	76	86	90	88	85	85

It is evident from the above table that both pig iron and steel show an activity far below any of the other products, and hence cannot be regarded as a close index of the business conditions prevailing in the United States to-day. The fact that practically all of the items show a marked reduction from the average of the two previous years merely points to the general stagnation of industries, and indicates in some measure the extent of that stagnation. The figures given, however, emphasize the fact that too broad deductions cannot be drawn from the excessive slump in iron and steel lines.

The Value of the Dollar

The purchasing power of the dollar continues on its course toward the pre-war level, though it will not travel the whole distance in anything like the near future. A distinction must be made between the purchasing power of the dollar, when used to buy commodities or engage the services of employees, and its value when used to represent the worth of real or personal property. Bonds, mortgages, life insurance policies and things of that sort are in essence expressed in gold, and relative to these things the value of the dollar did not greatly change. When a thousand dollars would buy only one-third or one-half as much material or labor as before the war it would still buy a thousand-dollar bond or pay a thousand-dollar mortgage or be a full settlement of a thousand-dollar life insurance policy.

For a time there was a question in some men's minds whether the dollar in all aspects had not decreased in value; whether if a dollar would buy

only one-half as much in commodities and service, the wealth of the country, the buildings, mines, bridges, factories, etc., had not doubled in nominal or dollar value, but so many things have a fixed value, as just indicated, that these would tend to swing the general value of the dollar back toward its former position.

In this department of THE IRON AGE of Jan. 30, 1919, reference was made to this influence, in a discussion of the general trend of commodity prices. Noting that an argument for the continuance of high prices was that wages were up and could not be reduced materially, it was observed: "As to wage rates and commodity rates having the ability to support each other, that is a case of 'the blind leading the blind.' Neither has an element of stability. . . . There is another factor, however, that in the long run always has a very great influence, and that is the wealth of the country, expressed in the real and personal property of the people. At pre-war valuation, this stands at \$200,000,000,000 or \$250,000,000,000."

The Chamber of Commerce of the United States having made a pronouncement (THE IRON AGE, June 23, 1921, page 1699) that the wealth of the United States in 1920 was \$290,464,000,000, it is of interest to compare this with previous statements by the Bureau of the Census. Since 1900 the bureau has computed the wealth in a non-census year. The last statement was made for 1912 and the next is set for 1923. The average annual increase in wealth from one statement to the next has been as follows, in per cent:

1850-1860	8.52
1860-1870	6.40
1870-1880	3.80
1880-1890	4.07
1890-1900	3.13
1900-1904	4.88
1904-1912	7.27
1912-1920	5.60

These percentages conform quite closely with the commercial history of the periods involved. There are low rates of increase between 1870 and 1880 and again between 1890 and 1900, decades embracing long periods in which there was much unemployment and therefore lessened production of wealth. Probably there has been some revaluation because of changes in commodity prices, but the change in valuation can have been only slight. To illustrate: commodity prices were not much more than half as high in 1890 as in 1870, and if properties had been valued in proportion there would have been shown scarcely any increase at all in "wealth" in the 20 years. The Chamber of Commerce statement of wealth in 1920 seems to be in logical sequence to the census statements of preceding years.

An idea of the weight that the wealth of the country can throw into the scale to make the dollar find its level, so that it will be of equal value whether buying commodities, labor or property, may be had by comparing the wealth with the wage and salary income of the people. The wealth in 1920, according to the statement cited, was about 290 billions. Estimating incomes in 1910, and allowing for increase in population against the number reported engaged in gainful occupa-

tions in 1910, the wage and salary income of the people of the United States in 1920, with full employment but at 1910 rates of remuneration, would be between 30 and 40 billions. The total value of commodities produced would be somewhere in the same neighborhood. Obviously "the wealth" of the country is going to have a great deal to do with determining the value of the dollar.

Electric Steel Last Year

Several striking developments in the progress of the American electric steel industry in 1920 appear in the statistics of the country's steel output, compiled by the American Iron and Steel Institute. The production of steel ingots and castings in electric furnaces was next to the largest ever recorded. At 502,152 gross tons it was only 18 per cent less than the war-time high record of 511,364 tons in 1918 and nearly 10 times the production 10 years ago of 52,141 tons.

As between ingots and castings the larger expansion has been in castings. Electric steel ingots made last year totaled 346,956 tons, or 8.48 per cent of the total ingot output, as against a percentage of 9.36 in 1918, the record year. Ten years ago ingots made in electric furnaces amounted to only about 2 per cent of the total or 52,141 tons. Significant, however, has been the progress made in electric steel castings. Last year the output exceeded all records, even the war years, at 155,196 tons. Of the total of all grades of steel castings last year electric furnace castings constituted 12.4 per cent as contrasted with 11.4 per cent in 1919 and only 4.50 per cent in 1917. The marked progress in this branch of the industry is emphasized by the fact that 10 years ago only 1320 tons was made, or an expansion in the decade of over 100 fold.

Still more important as well as significant is the growing use of electric alloy steel. Here again last year's output of electric alloy steel ingots was only exceeded in 1918 at 287,885 tons against 233,862 tons last year but in the case of electric alloy castings the contrast is sharp. From 1916 on, the making of electric steel alloy castings has made rapid strides. In that year only 926 tons were made but in 1920 this total was 11,710 tons or 17.1 per cent of the total electric alloy steel against 1.3 per cent in 1916. Even in one year the percentage of electric alloy castings of the total of alloy castings by all processes increased 4 per cent.

Our annual review of the electric steel industry in January showed an increase of 10 per cent over 1919 in the number of electric furnace installations. The production data reveal even more remarkable progress, the feature of which is not only the large total of electric ingots and castings but the marked advance in the foundry phase of the industry. The most important development, however, is the rapid growth of the demand for high-grade alloy steel castings made in such furnaces. The record made in 1920 by this comparatively new industry under peace conditions is prophetic of what may be expected when more normal conditions return to the country and the world at large.

CORRESPONDENCE

Cancellations and the Large Stocks of Surplus Steel

To the Editor: After reading over your article on "Cancelitis" on page 91 of this week's issue of THE IRON AGE, I feel impelled to write you on the same subject.

As far as the steel business is concerned, the writer's impression is that the cancelling of orders was not as severe as many of us were led to believe some months ago. There were some adjustments made between steel makers and their customers and as far as my knowledge goes the adjustments were satisfactory, in the main, to both sides. When the buyer is confronted with a situation which calls for his placing purchase orders from four months to a year ahead of his possible requirements, he is most certainly going to protect himself as far as possible. When business slumped over night as it did last year, he was further going to protect himself as far as possible by making such adjustments with his source of supply as was agreeable to both sides. The writer can speak rather freely on this subject, because in a normal year he would purchase from 3000 to 4000 tons of bars, plates, structural shapes, shafting, etc. When the slump came last year his adjustments of steel orders with the steel makers totaled considerably less than 100 tons and some of this tonnage had only been specified a few days when the adjustment was made, while on the remainder the shipping dates requested by the writer had been exceeded by the mills. In fact, on the majority of the tonnage promises of shipment by the mills had been exceeded. At that time we had a considerably larger amount of steel specified and which we accepted in the usual way when shipped. This steel was shipped inside of the date promised by the mills, and the writer felt that the proper thing to do was to accept the shipment even though it caused a surplus stock of certain items.

So having cleared my skirts as to cancelitis, as I cancelled no tonnage outright, but had arrived at a basis of agreement with several mills, (the amount was considerably less than 100 tons, but I never figured it out exactly), I wish to state that I believe that the larger part of the excessive surplus of steel that seems to be available to-day was caused by speculation and hoarding, possibly assisted by stocks which our Government and foreign governments have thrown on the market.

I know of a certain lot of steel bars now available and which was rolled by one of the leading independent steel companies. I inspected this steel this week, or at least I inspected part of it, as I did not take the time to go over the whole area. The bars of steel are scattered along for possibly a half mile. There are $\frac{1}{2}$ -in. rounds, $\frac{3}{4}$ -in. rounds, $\frac{1}{4}$ -in. rounds, angles, flats, billets, etc. I believe some of the material has been sold, but not so long ago the list totaled somewhere around 5000 or 6000 tons. On this steel are the figures in white paint, "3-17-19," which would indicate March 17, 1919. Also other figures for April and May, 1919. In other words, this steel was available during the steel shortage. At one time there were 600 tons of one size, namely, $\frac{3}{4}$ -in. round, from 0.16 to 0.22 carbon, in bars 15 to 20 ft. long. As far as yearly tonnage is concerned, these 6000 tons would be a drop in the bucket, but how many other piles were there scattered through the United States?

In the last paragraph of your article you state that the steel maker did not complain as loudly about cancelitis as did many others; and my experience through the beginning of the depression period was that there were few complaints from the steel makers outside of those relating to the cancellations from the automotive industry.

One of the cries that have been set up by the so-called reformers has been that the American people were too extravagant, and as far as that point of view is concerned I heartily concur. But to-day the majority of the American people are practicing enforced

economy and that applies both to public and private life. And an economical state of mind, in public and private life, does not produce prosperity in the country, because even when we are in an uneconomical frame of mind we produce approximately 40 per cent more than we can possibly consume. And when this economical state of mind, among buyers and users of steel products, is coupled with an excessive surplus of steel bars, etc., then it would not seem possible for the steel mills to have another period of prosperity until we get out of the economical state of mind and the excess stocks of steel have been absorbed. At this moment it does not look as though we could export very much in the line of bars or other mill products or finished machines of which the steel would be a part.

We shall probably remain in this economical state of mind until we wake up some morning and decide that the readjustment period has about reached the end; but that will not be until we have ironed out many wrinkles that still exist. To-day's is strictly a buyer's market as far as the manufacturing end of the game is concerned. It is also a buyer's market as far as the factory selling end is concerned; that is, on a great many products. The wholesaler is possibly on the same basis. But what transpires between the wholesaler and the retailer is outside of the writer's ken. What transpires between the retailer and the customer is plain to any of us who have our eyes open and wish to use them for the purpose of seeing and comparing.

H. A. RUSSELL.

York, Pa., July 15, 1921.

A New Journal of Management

The first number of *Management Engineering*, a monthly, sub-titled *The Journal of Production*, has been issued by the Ronald Press Co., New York. The editor is Leon P. Alford, who was for a number of years editor of the *American Machinist* and later of *Industrial Management*. His experience, both in journalism and in the practice of engineering, equips him in an unusual way for his new work. It is the announced purpose of the new journal "to help executives—the men of management—better to discharge their duties in preparing, organizing and directing industry to secure maximum production." The 64 pages of this first number impress the reader as much more than a preliminary flourish; they give evidence of plans well thought out and of a purpose to occupy a field that has been well surveyed. The featured articles are "The Pioneer Spirit in Engineering," "Training as a Factor in Reducing Labor Costs," "The Essentials of Storekeeping," "Yield Value Variations in Woodworking," "The Unexpected Trend in Accident Prevention," and "Basic Principles of Cost Reduction."

Courage must be added to the other requisites in bringing a new industrial publication into being at such a time as this; but the sponsors for *Management Engineering* evidently sense an opportunity in the country's crying need of greater production in all industry.

The Iron Age and Its Readers

The metal schedule of the Fordney tariff bill has been published in many ways by many periodicals and newspapers, but in only one place has it been published in full, with the proposed new rates presented in comparison with the rates of the present Underwood law and those of the Payne-Aldrich act; that is, in the columns of THE IRON AGE.

In THE IRON AGE of July 7 the new tariff bill was analyzed by our Washington correspondent from the standpoint of iron and steel interests; next a page and a half was devoted to the explanation of the metal schedule as made by Chairman Tilson of the sub-committee; then the metal schedule was given in full, including complete comparison of rates as above stated. The progress of the tariff bill, with particular reference to the metal schedule, has been closely watched and reported from week to week.

BETTER TONE IN GERMANY

But Pig Iron and Ore Decline—French and British Plan Agreements With German Mills

(Special Correspondence)

BERLIN, GERMANY, July 1.—German export interests estimate the present iron and steel consumption of Holland, Italy, Switzerland and other iron and steel consuming countries of Europe at about 25 per cent of the pre-war tonnage, a fact that must be considered in German exports. The volume of inquiries from abroad is satisfactory, but competition is keen and there is active price cutting by other Continental producers. A change for the better has evidently taken place, the reports from the wire market being particularly illustrative of the change in the tone of the market.

Negotiations with Argentina for delivery of 9500 tons of rails and track supplies have not been successful, the contract being booked by La Providence company in Belgium. The Argentine railroads are reported to be arranging another call for bids on 10,000 tons of rails and supplies, and should the German mark remain at its present low level, the German industry will undoubtedly stand a good chance of getting the contract. The recent order for 60,000 tons of rails placed by the Russian Soviet Government was booked at \$47 per ton, 20 per cent cash in gold and the balance against documents. Shipment of the first part is now being made. Recently negotiations were entered into at Berlin for another order of 100 locomotives, 3000 cars and 150 tons of rails.

Plans are being made for joint action of British and German companies in working the German market; representatives of the Vickers and Armstrong companies recently arrived and started negotiations with certain German interests. Negotiations are also pending between the French Schneider-Creuzot concern and a rival concern of the Hugo Stinnes group, but no details have been given out as yet. The recent locomotive awards have given increased employment to some mills and several large rail orders for Swedish account have also been secured.

Finished Material Improves and Pig Iron Slumps

Some deals in wire rods have been closed with Belgian customers probably as the result of the prolonged strike at the Ougrée-Marihaye works. On the other hand, export of wire products to Spain has slumped badly owing to the high provisional import duty. In general, export prices are being figured on a basis of bar iron at 78 to 80 Dutch florins per metric ton.

Pig iron is still dull, and whether the announced reduction of certain grades will influence the tone of the market remains to be seen, as the decision on the coal tax increase is still pending. The pig iron syndicate has reduced prices for Siegerland iron and steel-making iron, poor in copper, by 50 m. per ton and for spiegel-eisen 6 to 8 per cent and 8 to 10 per cent Mn. by 75 m. per ton, from July 1. Other prices remain unchanged. Imports of Luxemburg iron are on a very small scale, with prices limited to 1000 m. The steadily depreciating exchange will probably render this price obsolete within a few days. Blast furnace ferrosilicon is already offered at 1900 m. compared with the official quotation of 1980 m.

In the finished material market there is a decided improvement in wire and a growing disinclination of producers to make price concessions. Terms of delivery have been extended in some departments, though generally sufficient material is on hand to effect delivery within 2 to 3 weeks from date of order. Works have resumed the issuance of warehouse stock lists of large quantities of assorted grades and shapes, which has not been done for several years past.

Coincident with the relief of the finished material market, offers of semi-finished products are less pressing. We quote 1250 m. for ingots, 1350 m. for cogged blooms, 1400 to 1500 m. for billets and 1450 to 1550 m. for sheet bars. Contradictory reports are being re-

ceived from rail mills, some parties reporting very satisfactory employment while other works are curtailing production. Terms of delivery average 4 weeks. Heavy rails are quoted at 2300 m., while 1850 m. is named for light rails for mines, all f.o.b. maker's mill. Business in structural shapes is relatively light. It is assumed that the winter orders of the State railroads will stimulate the market, especially in car shapes. Prices have receded to 1700 to 1750 m. Business in bar iron is "hand-to-mouth," quotations fluctuating around the 1800 m. level. The situation in the sheet market is reflected by the dissolution of the heavy sheet syndicate. Prices exhibit a softening tendency. We quote heavy sheets, regardless of gage, at 1700 to 1800 m., base, Essen; medium sheets at 1750 to 1850 m. and light plates at about 1800 m., f.o.b. maker's mill. Warehouse stocks may be had at lower prices without guarantee of condition and quality. High-grade sheets are offered at the light plate price plus, according to quality. Black sheets bring 2200 m., sheets for stamping, double planished, 5000 to 5250 m., according to gage.

Wire Rods Active

The wire rod market has been improving rapidly during the past fortnight, especially in export sales. Prices are rather erratic, and while speculative lots may still be obtained at about 1650 to 1700 m., the majority of works are now naming 1800 to 1850 m. per ton and the latest export quotations range between 1950 and 2000 m., f.o.b. Rotterdam or Amsterdam. This price is obviously for overseas shipments since quotations given for other countries are on the inland market level. The wire convention has at last been dissolved, having lost its official character by being transformed into a commercial association. Prices have been given free since July 1. Business at hoop iron mills leaves much to be desired. Hot rolling mills report sluggish business, the best grade of hoops being offered as low as 2000 m. per metric ton.

Low Continental Steel Prices Quoted in England

The extent of the competition which British iron and steel companies are likely to meet from Continental steel is indicated by the following quotations on typical products recently made in response to British inquiry. The quotations are f.o.b. Antwerp or other Continental port and were made by manufacturers in the three countries named. The conversion has been made from British money into dollars and cents on the basis of recently prevailing exchange. The billet price is per gross ton and the other prices per 100 lb.:

	Belgium	France	Germany
Billets	\$22.26	\$24.11	\$22.26
Structural steel	1.36	1.36	1.24
Bars	1.40	1.40	1.20
Tube strip	1.32	1.49	1.49
Plates	1.24	1.36	1.24

The description of plates is not stated. British ship plates were quoted recently at the equivalent of about \$52 per gross ton, maker's works; beams at about \$49; bars, \$49; billets, \$39 to \$40. Some purchases of Continental rail blooms by British mills have been reported recently at £7 10s., c.i.f.

Officials of the Continental Motors Corporation, Detroit and Muskegon, Mich., have confirmed the recent report that a very large order for engines has been placed with the corporation by Durant Motors, Inc. Corporation officials will not state the size of the order, but report has it that it is for 100,000 engines. The four-cylinder Durant engine will be made at the Muskegon plant.

The Baltimore & Ohio Railroad Co.'s commercial development department, Baltimore, has just issued a very attractive series of pamphlets, giving a large amount of information in regard to natural resources of the districts through which the lines of the company pass. The pamphlets are edited by G. P. Grimsley, geologist.

Only Minor Changes in Metal Schedule

Despite Attacks Upon Duty on Ferromanganese, It Was Adopted Tuesday by the House—Congressman Tilson Disclaims Responsibility for Some Unpopular Features

—BY L. W. MOFFETT—

Washington, July 19.
THE IRON AGE BUREAU,
816 Fifteenth Street.

WITH only comparatively unimportant amendments made to it, the metal schedule of the permanent tariff bill was disposed of in the House late this afternoon after discussion of less than an hour and a half, duties on ferromanganese constituting the chief points of attack. Those assailing the duties not being Republican members of the Committee on Ways and Means, were unable under the rules to offer amendments and consequently did not try to do so. The amendments adopted, about 20 in all, were offered by Representative Tilson and principally were in phraseology in order to correct clerical errors. The bill will be passed Thursday.

One amendment classifies spiegeleisen as an alloy containing less than 45 per cent manganese and ferromanganese as an alloy containing 45 per cent manganese or more. In paragraph 305, the required content of molybdenum in order to get the additional duty of \$1.25 per pound, was changed from 1 to 1½ per cent, and a similar change was made with regard to tungsten content before application can be made of the additional duty of 72c. per lb. The wire paragraph, 316, was broadened so that all wire coated by dipping, galvanizing, etc., shall pay a duty of 1c. per lb. additional to the rate imposed on the wire of which it is made.

In replying to numerous attacks on ferromanganese duties, Representative Tilson made vigorous denial that they were suggested by the Steel Corporation and said that, contrary to the charges, the Steel Corporation's representative had opposed the duties. Among those attacking the ferromanganese duties were Representative Cooper, Republican, of Wisconsin, and Representative Carew, Democrat, of Arkansas. Representative Burton, Republican, of Ohio, attacked the rates on ferrosilicon and ferrotungsten.

The Duty on Ferromanganese

Before the metal schedule was taken up to-day, a number of attacks had been made on it. Some had been directed against the duties on ferroalloys and had come from Republican members who will vote for the bill. Among Republicans attacking the duty on ferromanganese was Representative Stafford of Wisconsin. He stated that he had received many protests from machine manufacturers and foundry interests of the country against the duties of 2 1-5c. per lb. on ferromanganese of more than 1 per cent carbon and 2 1-5c. per lb. and 28 per cent ad valorem on ferromanganese of less than 1 per cent carbon, the duties being based on the manganese content. He inquired of Representative Tilson, chairman of the subcommittee in charge of the metal schedule, why the committee had recommended the ferromanganese duties carried. The reply of Mr. Tilson showed plainly that the duties were not placed upon his personal recommendation, but were adopted against his vote and upon the suggestion of others.

"In view of what took place in the committee and the attitude on this particular matter of the member of the committee now being interrogated by the gentleman from Wisconsin (Mr. Stafford), I prefer that he

ask some other member of the committee to explain it," said Mr. Tilson. "I fear that I could not do so satisfactorily."

The Preliminary Debate

It was expected that the ferroalloy duties would be the object of greatest controversy in the metal schedule, and this expectation was fully realized this afternoon. Until to-day, however, the discussion of the metal schedule had been relatively slight and of a decidedly general character. Nothing like a close analysis of it had been made on the floor. This, of course, was partly due to the short time that had been given to the tariff in the House. Other schedules, such as those relating to chemicals, oils, cotton and lumber, received most attention and discussion became heated over them. Administrative features, drawn largely by the Tariff Commission, also came in for considerable argument, this being particularly true as to the American valuation plan.

Hurried Through the House

It can be safely stated, though members of the House resent it, that there is a rather widespread belief that the House bill is being hurried through with the knowledge that it will be greatly changed by the Senate. Some members of the House, for instance, who have received many complaints of the ferroalloy duties, have not even brought them to the attention of that branch of Congress, but are expecting that the Senate Committee on Finance will revise the rates considerably. It is evident, however, that those supporting the rates will ask the Senate to grant duties which are considered necessary to build up a domestic industry. Some who have sent protests against the duties on ferromanganese have declared that those now proposed are "indefensible," but that they favor a moderate protection for the domestic furnace interests.

In the course of a brief discussion of the metal schedule last week, Representative Tilson exhibited a tabulation of imports and domestic prices of products carried in that schedule, covering the years 1913 and 1920. The charts were prepared by the Tariff Commission and give the import value for the two years mentioned, so far as practicable, and the domestic prices of these articles at the time the charts were prepared.

Structural Steel Rate Attacked

Representative James W. Collier, Democrat, of Mississippi, attacked the rate of 7/20c. per lb. carried in paragraph 312 on structural steel. He sought to make a comparison between the imports and exports of structural steel, stating that the former were relatively slight, and that inasmuch as domestic steel was used almost exclusively for the construction of the merchant marine, navy, commercial building, etc., the tariff would be a tax on this work. He went so far as to say that the increase would be so great that perhaps a deficiency bill would have to be brought in, and that the duty would actually destroy the merchant marine. His line

of argument was fairly representative of that made against the metal schedule rates and denotes the lack of information of an illuminating character, and for that reason it was not taken seriously.

Chairman Fordney of the Ways and Means Committee replied that there has never been "under a Democratic free trade tariff bill or any other, a pound of steel brought into this country and put into a bridge that was ever built since the foundation of the Republic."

American Valuation Plan

Representative Longworth, a member of the Committee on Ways and Means, explained at some length the operation of the American valuation plan and denied vigorously that it would result in prohibitive duties. He said that rates in the Fordney bill had been lowered under the Payne-Aldrich rates in order to make allowance for the American valuation plan in the case of ad-valorem duties and to bring the revenues contemplated under the plan to the basis of those of the Payne-Aldrich act. Under the plan, ad valorem duties would be assessed on "home values" in the principal markets and bring about a uniform assessment for the same class of importations from countries having different costs of production. It was asserted by Mr. Longworth that the need for such a plan becomes "infinitely more pressing in these days of chaos in foreign exchange." The price on which the duty is to be assessed will be that prevailing on the date of exportation of the products imported at which comparable and competitive products of the United States were ordinarily sold or freely offered for sale in the usual wholesale quantities. In other words, it would be the general market price of similar articles in the United States. It does not involve the particular price that may prevail at a particular port of entry due to transportation costs or otherwise. In the case of steel, for instance, the price would be that prevailing in the principal market, or on the Pittsburgh basis. Assuming that there was an ad valorem duty of 15 per cent on steel plates and the Pittsburgh price was 2c. per lb. or \$40 per net ton, Pittsburgh, and the steel was imported at \$30, New York, the importer would pay 15 per cent of the American price, or \$6 a ton. The \$6, together with the \$30, or \$36, would represent the cost to the importer to bring the steel plates to New York. In other words, he still would have an advantage of \$1.60 per ton over the Pittsburgh maker in the New York market, for the latter would have a rate of 38c. per 100 lb. or \$7.60 per net ton to overcome, making the cost of the shipment from Pittsburgh equal to \$37.60.

Bargaining Features

Representative Longworth spoke favorably of the bargaining clause carried in the Fordney tariff which authorizes the President to reduce the conventional duties 20 per cent in the case of foreign nations with which he may negotiate trade agreements in return for the United States receiving the benefits of their minimum tariffs on given American products. Mr. Longworth said he could conceive of nothing which will have a more beneficial effect upon the enlargement and retention of American export trade than the bargaining tariff. He said that if other nations know that the President has it in his power to give them certain special advantages in the United States market in return for certain special advantages in theirs, he has every confidence that instead of discrimination against American exports there will be encouragement of them.

Upon passage of the bill by the House, the Senate Committee on Finance will arrange for hearings, lasting a month or six weeks, it is expected, and they probably will begin soon.

MORE MILLS ACTIVE

Schedules of Mills in Mahoning Valley Show Improvement

YOUNGSTOWN, OHIO, July 18.—Independent steel mill schedules in the Mahoning Valley are appreciably improved this week, especially finishing capacity, due in measure to accumulation of tonnage resulting from recent slack production.

Sixteen of the 51 independent open-hearth furnaces are fired, 35 of 105 sheet mills are active and 19 tin mills. Strip mill and pipe furnace schedules are likewise on a larger scale.

The Trumbull Steel Co. has the best operating schedule in many weeks—two open-hearths, two jobbing mills, six sheet and 19 tinplate mills.

Five of the tube mills of the Youngstown Sheet & Tube Co. are active and two of the Republic Iron & Steel Co.

Both the 84-in. and 132-in. plate mills of the Brier Hill Steel Co. are partially engaged.

Plant Operations

The Chicago, Burlington & Quincy Railroad Co. has added about 2300 men to its forces since July 1, 1300 of them to be used in car repair work and the remainder on maintenance of way.

The Nash Motors Co., Kenosha, Wis., has resumed production in the four cylinder car division works at Milwaukee with a force of 750 men, the same number engaged at the time the factory closed down May 31 for balancing of stocks. The entire crew is working on an 8-hr. a day schedule.

The Erie Railroad Co., Buffalo, has resumed operations at its local car and locomotive shops after a shut-down of several months giving employment to about 800 men. The company has also placed its shops at Hornell, N. Y., in service, effective July 11, with a working force of about 1000 men.

The Great Northern Railway has reopened the machine shop department of its division headquarters at Superior, Wis., which was closed May 27 for an indefinite period. About 225 men have returned to work at a reduction in wages. The shops handle most of the new construction and repair work on cars and locomotives used in the ore carrying trade between the Minnesota mines and the Great Northern docks at Superior.

Follansbee Bros. Co., Pittsburgh, is planning to resume operations at its plant at Follansbee, W. Va., in the week of July 25. This plant has been down since June 30.

According to S. W. Wakeman, general manager Fore River Works, Bethlehem Shipbuilding Corporation, Ltd., Quincy, Mass., a further reduction in working forces is in order. A total of 2500 employees will be laid off indefinitely and the remaining 1500 will be put on part time. This reduction follows an announcement from the Navy Department that its allotment of funds for 1921 naval work has been reduced materially under the amount required to carry on work as originally laid out.

The New Departure Mfg. Co., Bristol, Conn., ball bearings, etc., normally employing more than 4000, reports increased orders and consequently re-employment of about 90 per cent of the force engaged in ball-bearing manufacture. The Meriden, Conn., plant remains closed.

The Champion Horse Shoe Co., Pawtucket, R. I., has closed its plant until after Labor Day. Repairs to the furnaces necessitated this move rather than the depression of business. The plant has been operating on an 80 per cent basis and employing 150.

The Cutaway Harrow Co., Higganum, Conn., plows, harrows and other farm implements, normally employing approximately 100 skilled hands, has closed its plant for an indefinite period.

Steel Makers Oppose Duties on Manganese

Free Ore Urged, with Conservation of Domestic Supply—Ferromanganese Duty Could Then Be Lowered and Still Be Protective

WASHINGTON, July 19.—So far as the steel trade has been heard from concerning the proposed duties on manganese ore and ferromanganese, its attitude is one of strong opposition to both duties. Expressions so far made indicate that a determined effort will be made to restore manganese ore to the free list and to secure a very substantial reduction in the duty on ferromanganese. Steel manufacturers are opposed also to the duties on magnesite as excessive. The Metal Schedule of the new tariff bill as reported to the House last week provides for a duty of $\frac{3}{4}$ c. per lb. on calcined magnesite including dead burned and grained, and $\frac{1}{2}$ c. per lb. on crude or ground magnesite. The opposition of the principal independent steel producers of the country to the manganese ore and ferromanganese provisions of the new tariff bill is indicated in a statement presented on their behalf to the Ways and Means Committee of the House. Extracts from this statement are given below. It is understood that similar representations will be made to the Finance Committee of the Senate. It will be seen that emphasis is put upon the difference between the position of the United States Steel Corporation as an importer of its own manganese ores and a producer of its own ferromanganese and the position of the independent steel companies, which for the most part are buyers of ferromanganese in the market:

Advantage of the Steel Corporation

"The principal alloy used in the manufacture of steel is ferromanganese, the smelted product of manganese ore. This item furnishes a fair example of what is contemplated by way of a burden upon the cost of producing steel in the plants of the independent steel works of the country. This proposed increase in duty will amount to approximately 33c. per ton of steel, as a duty tax, or an increase in the cost of steel of approximately \$6,600,000 per annum, calculated at 33c. per ton on 20,000,000 tons of annual output from these independent plants, not including the output of the United States Steel Corporation.

"Furthermore, this tax upon the independent producers would be in effect a direct benefit to the United States Steel Corporation, our principal competitor, by nearly the full amount of the tax proposed, because the Steel Corporation produces and imports its own manganese ores and manufactures its own ferromanganese. Therefore the proposed duty of 1c. per lb. on the manganese content of manganese ore, which ore averages approximately 48 per cent, would call for about 2.2 tons of ore for the production of one ton of ferromanganese, so that the increased cost on account of the duty paid by the Steel Corporation on imported manganese ore would amount to only about 7c. per ton increased cost of steel produced by them, whereas the independent or smaller producer of steel, who does not consume enough ferromanganese to justify its manufacture by importation of manganese ore, and who therefore must purchase ferromanganese subject to the 2 $\frac{3}{4}$ c. per lb. duty [The committee later changed this duty to 2.2c. per lb.—EDITOR] would have his cost of steel increased about 33c. per ton, because it requires not less than 15 lb. of ferro per ton of soft steel, and we do not hesitate to say that this added burden to the independent steel producers' cost, taken in connection with their present disadvantages, would seriously

weaken their competitive position and drive them into combinations for the manufacture of ferromanganese, to the general detriment of all interests.

"Aside from the discrimination which would result in favor of the United States Steel Corporation, very great injustice would also result to all producers of steel and pig iron, viewed from the standpoint of equitable taxation, because the proposed exorbitant and destructive rates are all out of proportion to the general rates proposed on finished iron and steel under Schedule C.

Iron and Steel Duties Much Lower

"The schedule of duties now recommended by the steel people, based on current values for steel, averages on an ad valorem basis, from pig iron to finished steel products, approximately from 8 to 20 per cent for the principal iron and steel products, whereas the alloy manufacturers, whose product is our raw material (which product has a low labor cost) ranges in duty, on an ad valorem basis at present values, from 48 to 200 per cent. This comparison fairly indicates the injustice of the alloy schedule, as there can be no justification for maximum rates of duty on raw materials carrying minimum labor costs, whereas the highly refined, rolled or forged steel products are entitled to maximum rates, because they carry maximum labor costs.

"We would further state that ferromanganese is a blast furnace product like pig iron; but the manufacture of ferromanganese requires about three times as much coke and about four times the labor cost of pig iron, while the output per furnace is about one-third that of pig-iron, and the cost of ferromanganese, above the manganese ore charge, is about four times that of pig iron. So that it is fair to say, a relative rate of duty on ferromanganese, based on a pig iron duty of \$2.50 per ton, would be \$18 per ton. With iron ore on the free list, no duty should be placed on manganese ore, because it costs no more to mine domestic manganese ore than to mine domestic iron ore, and therefore there should be no discrimination. Furthermore, as we must import most all of our manganese ore, no obstacle should be placed in the way of a free movement.

"As a further illustration we would state that the proposed duty on ferromanganese of 2 $\frac{3}{4}$ c. per lb., calculated on the manganese content of ferromanganese, equals about \$44 per ton, while the duty proposed on wire nails is 4/10c. per lb. or \$8 per ton. In other words, wire nails made from pig iron, then into steel, next into wire rods and finally nails, after undergoing four distinct processes of manufacture, is listed to receive less than one-fifth protection contemplated for ferromanganese, which is part of the raw material required to produce a wire nail.

Protection, But Not High Protection

"Another phase of the situation which we would bring to your attention, although the records speak for themselves, is that when the Payne-Aldrich bill was under consideration, in response to the general sentiment throughout the country for lower duty, the steel manufacturers of the United States recommended to the Ways and Means Committee radical reductions downward in the Dingley bill, which action on their

part resulted in a cut of about 50 per cent of the Dingley schedule and the enactment of the Payne-Aldrich bill. In contrast with the attitude of the steel manufacturers, manufacturers in many other lines urged and obtained unfair rates of duty, which outraged public sentiment, and as a result the Republican party went down to defeat.

"Free raw material is a Republican principle and has been written into the Republican tariff measures. To revoke that principle now, through the substitution of prohibitive rates on alloys and refractories, would not only be politically unwise, but unwise from the standpoint of conservation of our raw materials, because this country's supply of these raw materials is not only meager in quantity but lean in character, and everything that can be done should be done to conserve these meager reserves, by encouraging the importation of these materials, so that in times of national peril home supplies of not only alloys but refractory materials can be more fully depended upon for purposes of national defense."

Lower Duty Urged on Magnesite

The continuance of the Underwood duty of 10 per cent on magnesite is urged on behalf of the manufacturers of steel in the following communication which was addressed to Chairman Fordney of the Ways and Means Committee:

"Steel manufacturers, while advocating the application of the protective principle for the protection of

all American manufactured products, do not believe that the proposed rate of \$15 per ton on magnesite is necessary for protective reasons, because this rate per ton is nearly 50 per cent of the selling price of magnesite at the Atlantic seaboard; furthermore, we question whether any increase in duty over that of 10 per cent provided under the present law is necessary for protective purposes, because during the year 1920 our total imports of magnesite were not in excess of 50,000 tons, whereas our domestic production was close to 300,000 tons, and it is therefore quite apparent that domestic trade has not suffered any serious competition, even under the Underwood bill.

"We therefore urge that your committee, in fixing the rate of duty, give full consideration to the thought that magnesite is one of the raw materials used in the manufacture of steel, and should be rated like other raw materials, either on the free list or on a revenue basis. Otherwise, cost of manufacturing steel will be unnecessarily increased. Inasmuch as our domestic reserves of magnesite are somewhat limited, importation of part of our requirements is in harmony with the policy of conservation and therefore will strengthen our national position in time of war, and our world's competitive manufacturing position in time of peace.

"With the iron ores of Michigan and other States on the free list, the question may be fairly asked, Why should magnesite production of Oregon and California be entitled to preferential treatment unless for revenue purposes?"

FILLING OLD ORDERS

New Business Light in Mahoning Valley—Price Cutting on Sheets

YOUNGSTOWN, OHIO, July 19. — Considerable tonnages of steel products have been accumulated by Mahoning Valley producing interests recently, accounting for a substantial enlargement in active productive capacity. W. E. Manning, vice-president and general sales manager of the Youngstown Sheet & Tube Co., states that incoming business is in insufficient volume to warrant a statement of general improvement.

It is the consensus of opinion among leaders of the industry in the Mahoning and Shenango Valleys, however, that the low point in the period of depression has been passed, especially in the steel industry. An important manufacturing consumer of various steel lines believes that steel prices in some lines are virtually at the bottom, and that buyers may be expected to come into the market from now on to satisfy their requirements.

Prices are not as firm under the new schedule on some products, however, concessions being offered on sheets and plates. An important district maker reports that 3.25c. and 4.25c., respectively, are being quoted on black and galvanized sheets, which is \$5 per ton below the recently stabilized price level in each instance. The lower prices have served to create considerably more inquiry, though actual business placed has been for small tonnages.

Owing to season conditions and the fact that automobile models are being changed at this season, automobile makers are curtailing their full-finished sheet requirements. Producers, as a consequence, who have been virtually operating at full capacity for an indefinite period, are preparing to modify their operations and may fully suspend within a short time.

Tank Plate Orders

Plate business before the trade is largely confined to small-lot orders of tank plates, with the price around 1.90c., which compares with the nominal market quotation of 2c.. Negotiation of important car repair contracts is expected to lead to business from these quarters, which will have to be placed, though, at bottom prices to meet the terms of such contracts.

Some improvement is noted in wire and nail buying, the further reduction in prices serving to bring buyers into the market for current needs at least. The market is holding at 2.50c. and 2.75c. on plain wire and nails, respectively. An inquiry involving upwards of 1000 tons of rods has been before the trade and is expected to lead to business. A concession price is anticipated.

Reduction in the price of strip steel has brought out some tonnage, enabling makers in this territory to maintain output at 50 per cent. While a large part of current production is for automobile uses, other buyers are entering the market.

Concessions on tinplate from the \$5.75 price are reported. Somewhat more than ordinary activity is reported in this market.

Low Prices on Basic

Weakening of basic pig iron prices brings a hint of \$18 for Valley iron, and a sale of 2000 tons at \$18.50 by a Valley steelworks interest, which has been purchasing its iron requirements rather than start its own furnace, is reported to have been made. Low phosphorus iron was recently quoted at \$35 by a district interest. Bessemer iron has been offered at \$21, though the ruling price continues to be \$21.50.

Pipe buying is still confined chiefly to the smaller sizes and only in volume sufficient to maintain production at 20 per cent.

The semifinished market is naturally stagnant, with sheet bars available at less than the \$35 quotation. Small billets are being quoted at \$34 and slabs at \$33. The minimum on forging billets appears to be \$40, with independent production at less than 10 per cent.

A large fabricator of fireproofing and metal furniture reports increased inquiry, some of which is expected to materialize into business. Fabricators of steel reinforcing materials are getting demand for materials for public buildings, highway and industrial developments. Such buying is maintaining operations at 60 per cent.

Though an occasional carload is moving, the old materials market is lifeless. Railroad scrap is down about 50c. per ton, bringing the market range from \$11.50 to \$13, depending upon the nature of the material.

Prime Western spelter is quoted at 4.30c., which is down 5c. from the recent level.

JAPANESE ACTIVITY

Orders for Structural Steel, Tin Plate, Sheets and Copper—Canceled Material at New York

NEW YORK, July 19.—The Japanese market continues to be about the only foreign market showing any noticeable activity. The recent bridge inquiry totaling 1500 tons for the vicinity of Tokio has been placed with Mitsui & Co., which also received the previous order for about nine bridges. Takata & Co. has been awarded the order for 5000 boxes of tin plate for the Imperial army. Buying of copper continues, one New York exporter having recently booked an order for about 200 tons of copper ingots for a Japanese consumer. Sheet buying is still a fairly large item from Japan. An American exporter dealing with Japan is quoting on about 100 tons of light gage black sheets and a large Japanese house recently placed an order with a mill, which has never before been in the market to roll sheets for about 400 tons of black sheets, No. 31 gage, packed for export. The inquiries for short mile-ages of 12-lb., 25-lb. and 30-lb. rails for Japanese consumers have not yet been placed.

Light buying continues by the South Manchurian Railroad, and there is some inquiry and purchasing of electric units and equipment in the Far East. One Japanese house is now quoting on 700 Shelby seamless steel poles, tapered from 2-in. to ¾-in. at the top for use on an electric trolley line in Japan.

Quantities of canceled material are still available at the port of New York. Lots of bars, angles and tees in good condition are reported offered as low as 1c. per lb. This material was originally consigned to

South American markets and canceled. One exporter has been negotiating for the purchase of a lot of electrical sheets, which have been offered at 4c. per lb., against an average market price of 7.50c. per lb. These sheets were originally purchased for shipment to an Italian consumer.

The Ulen Contracting Corporation, 120 Broadway, New York, is reported to have a contract from the Bolivian Government for the construction of a new railroad line in that country, extending from Villazon to Atoche, 128 miles, with cost estimated at \$10,000,000. The contract is to be completed in 5 years. The specifications call for the installation of American type of track equipment, with similar motive power. Railroad shops and other features are included. This report is not confirmed.

The Cie Centrale de Construction, Haine St. Pierre, Belgium, informs THE IRON AGE that it is interested in hearing from American manufacturers of shapes, steel castings, buffers and drawing bars, couplers, tires, axles, springs, forgings, car hardware, car lighting systems, brakes, car heating systems, reversible and fixed seats and all other rolling stock specialties.

The Chinese Government railroads are reported to have placed an order in Belgium for 30 prairie type locomotives and 6 British type locomotives. Chinese railroads have also placed orders for 300 freight cars with the American Car & Foundry Co. and 600 freight cars with the General American Car Co.

Ajuria y Aranzabal, Barcelona, Spain, has purchased a 1-ton electric furnace for the production of steel castings, from the Pittsburgh Electric Furnace Corporation, Pittsburgh. This is the second electric furnace purchased by the Spanish company from the Pittsburgh company.

AUSTRIAN TARIFF QUESTION

Protection Held Unnecessary by Consumers, Farmers and Labor—Germany Active in Mergers

(Special Correspondence)

VIENNA, AUSTRIA, June 22.—Attention has been called to the attempts of the iron producing industry to reintroduce customs duties on pig iron and semi-finished material and increase the present rates on finished products. Consumers as well as the trade and labor opposed this plan and the Government, hard pressed from both parties, eventually submitted the whole question to a committee composed of representatives of producers, consumers, farmers and labor. The producers pointed to the high cost of production and urged the necessity of protection against foreign competition. The Government, however, was impressed by the argument that the proposed protection would result in an advance in the cost of raw products by 40 per cent and nullify all attempts that have been made to bring down prices. Representatives of the iron working industry declared that tariff protection would cause a serious crisis affecting as it would 250,000 workers, and the idea of a protective tariff for a country exporting 80 per cent of its production was held to be absurd.

Germany Active in Austria

Germany is as active in the Austrian market as ever. Aside from mere competition, there is "peaceful penetration" in the merging of interests. A joint-stock company for railroad material has been established by the large merchant firm of Otto Wolff at Cologne with the co-operation of the Rheinische Stahlwerke and the Vienna firm of Biedermann & Co. The capital stock amounts to 20,000,000 kronen. Another company recently established is the "Mannesmannröhren-und Eisenhandels Gesellschaft m.b.H.," which is a merger between the Mannesmann tube works and the Freistadt Steel & Iron Works for the

purpose of selling tubes in Austria. The black sheet syndicate at Cologne is represented by a newly established company at Vienna and another firm catering to the sheet and rolled material markets is Dobbertin & Co., exporters, Hamburg, with a separate company in Vienna.

Very little activity is noted in the market—the pressure of German supplies accounting for the subdued tone. Demand is light, consumers anticipating further price concessions. Several of the smaller rolling mills have laid off men and price cuts by other works are proving ineffective against German competition. Fabricators are offering large stocks at prices frequently below warehouse or mill prices.

The Demming Co., Salem, Ohio, has resumed operations in its plant which has been shut down about three months.

The American Metal Products Co., Detroit, has let contracts for the construction of a new brick and steel carbide generator plant.

Contracts have been let by the Timken-Detroit Axle Co., Detroit, for the erection of a brick and steel power house on Clark Avenue.

The Herbrand Co., Fremont, Ohio, manufacturers of drop forgings has resumed plant operations with 250 men. The plant had been shut down for some time.

The United States Screw & Stamping Co., 91 Exchange Street, Worcester, Mass., recently incorporated with a capital of \$25,000 to manufacture screw products, metal stampings, etc., does not expect to build but will buy more equipment shortly.

United States production of sulphuric acid increased from 2,338,280 tons in 1914 to 3,296,270 tons in 1919, a gain of 41 per cent, according to the Census Bureau. The value of product was \$15,395,100 in 1914, or \$6.58 per ton; in 1919, \$35,638,200, or \$10.81 per ton.

Iron and Steel Markets

PRICE CUTTING GENERAL

More Concessions in Plates, Shapes, Bars and Sheets

Sharp Competition in the Chicago District— Railroad Buying Increasing

Cutting of the steel prices announced early in July has been more general in the past week, particularly in plates, structural shapes, reinforcing bars and sheets. The favorable feature has been that more business has come up. In the eagerness of producers to get a share of it prices suffered.

Railroad and construction demand are responsible for most of the week's activity in plates and shapes and the accompanying concessions of \$3 to \$5 per ton in the prices of the two products. The buying was not such as to indicate any change in the general situation, much of it having been in sight recently awaiting favorable prices.

Steel works operations are on a smaller scale in some districts and in others practically unchanged. The Youngstown district in particular is at a low rate.

Aggressive competition between Steel Corporation and independent steel has been seen in the Chicago market. Pittsburgh basing has gone by the board in that district and on a small plate order from a railroad 1.80c., Chicago, was done. Presumably lower prices were made on 3000 tons of steel for car repairs, 2600 tons placed by one fabricating company and 1200 tons by another. The week's transactions at Chicago show that the extent to which the announced prices are cut depends entirely on the size and character of the order and the hunger of the mill.

At Philadelphia a 5000-ton order for plates and shapes for a fabricating company went at 1.75c., Pittsburgh, for the plates and 1.80c. for the shapes, whereas both are presumably 2c., Pittsburgh. Several lots of about 1000 tons, reported in the New York market, brought out prices of 1.80c. and 1.85c. and in one case 1.70c.

In concrete reinforcing bars 1.70c. has been reported for soft steel. A round volume of such bars is under active negotiation, including 3800 tons for export.

Considerably more car repair work is ahead. The Lehigh Valley's repair and rebuilding program includes 5000 freight cars and the New York Central will do much in both car and locomotive repair. The Illinois Central is expected to buy 140 locomotives.

Sheets have been sold in the past week at \$3 to \$5 per ton below the so-called stabilized basis. Buying is better and mill operations have increased about 10 per cent.

The wire trade shows little movement either in agricultural or jobbing lines, but there is little disposition to go below the 2.75c. basis, in comparison with what is happening in heavy steel products. Recent mill operations have been around 30 per cent.

A 4000-ton girder rail order has been placed with the Lorain, Ohio, mill by the Chicago Surface Lines.

Cast iron pipe lettings have been above the average in the past week and some attractive business is ahead, including 5700 tons for Detroit and 3000 tons for Hammond, Ind. Prices continue to settle.

Eastern Pennsylvania furnaces have taken the lead in reducing pig iron prices, reductions of from \$3.50 to \$4 per ton having been made in the past 10 days, the most precipitate drop since the decline began. This has been due largely to keen competition from furnaces at Buffalo, where very low quotations prevail. In other centers, new concessions of from 50c. to \$1 have been made. In Alabama, although there is now only one merchant stack in blast and stocks are declining, the market is weak with the tendency still downward. Belgian iron is being offered in this country and a sale of 100 tons has been made at \$30, delivered San Francisco, but buyers are slow to place orders in a declining market for foreign iron for which deliveries are uncertain.

In the export trade the most significant fact is that Belgian steel mills, which have been especially aggressive in outside markets, are now filled up for some months ahead. The German works, whose low prices have been an unsettling factor in South America and elsewhere, are also booked to a degree that will make them less of a menace to American mills.

A 12,000-ton rail inquiry from the Chilean Government, withdrawn late last year, is coming up again next month. German mills were low bidders before.

The high manganese ore and ferromanganese duties in the new tariff bill having passed the House against the protests of steel producers, a determined effort will now be made by the industry to secure their reduction by the Senate.

Pittsburgh

PITTSBURGH, July 19.

Although the iron and steel market here is weak and there has been no material increase either in business or in plant activities, the situation sentimentally is better than it has been. The idea is fairly prevalent that the stocks of usable material in consumers' hands as of Dec. 31, 1920, have been pretty well liquidated and that the jobbers' stocks, though still fairly large, constitute less of a hindrance to mill business now than they did a few weeks ago. Consequently, hopes are stronger that orders soon will begin to show some increase.

If anything, price concessions have been more frequent in the past week than they were just following the last effort at stabilization. This development, however, is regarded as a constructive step in that when actual negotiations are started there is not likely to be a wide gap between buyers' and sellers' price ideas to hinder a speedy consummation of deals. Quotations on sheets in the past week of from \$3 to \$5 per ton below the stabilized prices have been common and tentative inquiries for plates against some of the tank business which recently has been placed have developed a definite quotation of 1.85c., Pittsburgh, and one buyer claims to have been quoted even less. In connection with the shading of quotations, there are reports from reliable sources that the Steel Corporation is disposed to meet competition at least on the major products.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	July 19, 1921	July 12, 1921	June 21, 1921	July 20, 1920
No. 2X, Philadelphia	\$21.85	\$25.50	\$25.50	\$48.15
No. 2, Valley furnace	19.50	20.50	21.50	45.00
No. 2 Southern, Cin'ti	24.50	24.50	26.50	45.60
No. 2, Birmingham, Ala.	20.00	20.00	22.00	42.00
No. 2 foundry, Chicago	18.50	19.00	20.50	45.00
Basic, del'd, eastern Pa.	21.25	23.50	25.00	44.40
Basic, Valley furnace	19.50	19.50	20.50	46.00
Bessemer, Pittsburgh	22.46	22.96	24.46	47.40
Malleable, Chicago	20.50	21.00	22.50	45.00
Malleable, Valley	21.46	21.46	22.96	44.40
Gray forge, Pittsburgh	36.00	36.00	37.50	57.50
L. S. charcoal, Chicago	36.00	36.00	37.50	57.50
Ferromanganese, del'd	70.00	70.00	70.00	225.00

Rails, Billets, etc., Per Gross Ton:	July 19, 1921	July 12, 1921	June 21, 1921	July 20, 1920
Bess. rails, heavy, at mill	\$45.00	\$45.00	\$45.00	\$55.00
O.-h. rails, heavy, at mill	47.00	47.00	47.00	57.00
Bess. billets, Pittsburgh	33.00	33.00	37.00	65.00
O.-h. billets, Pittsburgh	33.00	33.00	37.00	65.00
O.-h. sheet bars, P'gh	35.00	35.00	39.00	70.00
Forging billets, base, P'gh	38.00	38.00	42.00	85.00
O.-h. billets, Phila.	38.74	38.74	42.74	69.10
Wire rods, Pittsburgh	42.00	43.00	48.00	75.00
Skelp, gr. steel, P'gh	2.00	2.00	2.00	3.25

Finished Iron and Steel,	Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.10	2.15	2.25	4.75	
Iron bars, Chicago	1.90	2.00	2.20	3.75	
Steel bars, Pittsburgh	1.80	1.90	2.00	3.50	
Steel bars, New York	2.18	2.28	2.38	4.02	
Tank plates, Pittsburgh	1.80	1.90	1.90	3.25	
Tank plates, New York	2.18	2.28	2.28	3.77	
Beams, etc., Pittsburgh	1.85	2.00	2.00	3.10	
Beams, etc., New York	2.23	2.38	2.38	3.27	
Steel hoops, Pittsburgh	2.50	2.50	2.50	6.50	

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	July 19, 1921	July 12, 1921	June 21, 1921	July 20, 1920
Sheets, black, No. 28, P'gh	3.25	3.50	3.75	7.50
Sheets, galv., No. 28, P'gh	4.25	4.50	4.75	9.00
Sheets, blue an'd, 9 & 10	2.50	2.65	2.85	6.00
Wire nails, Pittsburgh	2.75	2.75	3.00	4.00
Plain wire, P'gh	2.50	2.50	2.75	3.50
Barbed wire, galv., P'gh	3.40	3.40	3.85	4.45
Tin plate, 100-lb. box, P'gh	\$5.75	\$5.75	\$6.25	\$7.00

Old Material, Per Gross Ton:	July 19, 1921	July 12, 1921	June 21, 1921	July 20, 1920
Carwheels, Chicago	\$12.50	\$13.25	\$13.25	\$35.50
Carwheels, Philadelphia	16.00	16.00	18.00	38.00
Heavy steel scrap, P'gh	12.00	12.00	12.75	26.00
Heavy steel scrap, Phila.	11.00	11.00	11.00	22.50
Heavy steel scrap, Ch'go	10.00	10.00	10.50	24.00
No. 1 cast, Pittsburgh	16.00	16.00	16.50	40.00
No. 1 cast, Philadelphia	17.00	16.00	17.50	38.00
No. 1 cast, Ch'go (net ton)	12.50	12.50	12.50	36.00
No. 1 RR. wrot, Phila.	13.50	13.50	14.00	33.00
No. 1 RR. wrot, Ch'go (net)	9.00	9.25	9.50	24.50

Coke, Connellsville, Per Net Ton at Oven:	July 19, 1921	July 12, 1921	June 21, 1921	July 20, 1920
Furnace coke, prompt	\$2.75	\$2.75	\$2.75	\$17.00
Foundry coke, prompt	4.00	4.00	4.50	18.00

Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	12.75	12.75	12.75	19.00
Electrolytic copper, N. Y.	12.62½	12.62½	12.75	19.00
Zinc, St. Louis	4.25	4.30	4.45	7.95
Zinc, New York	4.75	4.80	4.95	8.30
Lead, St. Louis	4.35	4.35	4.20	8.50
Lead, New York	4.40	4.40	4.40	8.75
Tin, New York	27.00	28.50	28.75	49.50
Antimony (Asiatic), N. Y.	4.65	4.75	5.12½	7.50

Composite Price, July 19, 1921, Finished Steel, 2.407c. per Lb.

Based on prices of steel bars, beams, tank plates, open-hearth rails, plain wire, black pipe and No. 28 gage black sheets	These products constitute 88 per cent of the United States output of finished steel.	July 12, 1921, 2.493c. June 21, 1921, 2.607c. July 20, 1920, 3.974c. 10-year pre-war average, 1.684c.
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Orders for sheets, at least with the leading interest, are a little heavier than they have been and this company has increased its operations in the past fortnight by about 10 per cent. Generally, however, the trading situation is one of jockeying by buyers and sellers over prices without much business resulting. Pipe makers who would meet the prices being offered by the oil companies, would have to go pretty low to secure an order. It also is noted that, on a recent inquiry for plates, shapes and bars for the Washington Navy Yard prices quoted by jobbers were well below those named by several large mills. Actual business in pig iron is light, but every advantage offered by freight rates is seized by middle men. The result is an unsettled and indefinite market.

We note the sale of round lot of basic iron at a delivered price of \$19.60 to a Pittsburgh district melter, the iron going from a furnace having a lower freight rate than is enjoyed by Valley furnaces. Figured on a Valley furnace basis with \$1.96 per ton freight, this business would mean \$17.64 at Valley furnaces. The same condition, more or less, is true of foundry iron.

There continues to be considerable agitation for a cut in railroad freight rates on materials entering the manufacture of iron and steel and in addition merchant producers of high-grade iron are beginning to seek concessions from the present nominal quotations on ore. With lower ore prices, blast furnace interests declare that they might be able to compete with the steel companies on present high iron prices.

Pig Iron.—Outside of a couple of fair-sized sales of basic iron carrying a delivered price of \$19.60, business has been entirely of carload lots, and even these have not been especially numerous. The market on Valley basic iron does not appear to be quotable at less than \$19. Iron of that grade has been offered at \$19, furnace, without takers, but at the moment the

price is about as low as any of the steel companies, or merchant producers in that district who have iron for sale, are willing to go. Bessemer iron generally is held at \$21, Valley furnace, but it is doubtful whether sales could be made at above \$20.50, and we revise quotations accordingly. Some producers still are holding No. 2 at \$20.50, Valley furnace, but \$20 is about as high as any business has been done lately, and \$19.50 in the past few days has become the going base.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.96 per gross ton:

Basic	\$19.00
Bessemer	20.50
Gray forge	18.50
No. 2 foundry	19.50
No. 3 foundry	19.00
Malleable	20.50

Iron and Steel Bars.—Very little demand is developing for merchant steel bars in this district, and prices are entirely nominal. Western mills appear willing to take tonnages at less than 1.90c., Pittsburgh, and naturally buyers here do not think the latter price is likely to hold. The Navy Department will open bids Aug. 5 against a fairly large tonnage of soft steel bars for the several navy yards throughout the country. Reinforcing bars rolled from billets are encountering stiff competition on prices from rerolled rail bars. Iron bars are dead and a quotation is merely what is asked by makers.

We quote steel bars rolled from billets at 1.90c.; reinforcing bars, rolled from billets, 1.90c. base; reinforcing bars rolled from old rails, 1.75c. to 1.85c.; refined iron bars, 2.50c., in carloads f.o.b. mill, Pittsburgh.

Billets, Sheet Bars and Slabs.—Business still is at a standstill and quotations are untested and nominal. It is evident, however, that the stabilized quotations are not being strictly adhered to, as a Cumberland, Md., maker of tin plate recently was able to buy about 1500 tons of sheet bars at around \$35 delivered, which is

equivalent to about \$33, Pittsburgh. It is said that the business was taken by a western Pennsylvania manufacturer.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$33; 2 x 2-in. billets, \$35; Bessemer and open-hearth sheet bars, \$35; slabs, \$34; forging billets, ordinary carbons, \$38, all f.o.b. Youngstown or Pittsburgh mills.

Ferroalloys.—Inquiries are few and rarely are for more than a carload of material. Actually there is so little business that it is impossible to do anything more than name approximations of what might be done if there was business. Makers' quotations are the same as they have been for several weeks, but there is no question that real orders would develop concessions.

We quote 76 to 80 per cent ferromanganese at \$70 delivered on domestic; English, 76 to 80 per cent, \$70, c.i.f. Atlantic seaboard. We quote average 20 per cent spiegeleisen at \$27 to \$28 furnace quoted by makers on direct business and \$25 to \$26 furnace on resale tonnages; 50 per cent ferrosilicon, \$65 furnace, freight allowed, for domestic and foreign material. Bessemer ferrosilicon is quoted f.o.b. Jackson County and New Straitsville, Ohio, furnaces, as follows: 9 per cent, \$41.50; 10 per cent, \$45; 11 per cent, \$48.50; 12 per cent, \$51.60. Silvery iron, 6 per cent, \$32; 7 per cent, \$33.50; 8 per cent, \$35.50; 9 per cent, \$37.50; 10 per cent, \$40; 11 per cent, \$43.30; 12 per cent, \$46.60. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is \$4.06 per gross ton.

Wire Rods.—The price of \$42, Pittsburgh, for the base size of soft rods, recently announced by the American Steel & Wire Co., has been adopted by independent makers. Very little demand is noted even at this concession of \$6 per ton from the April 13 base. The margin between wire rods and plain wire is now \$12 a ton and while this is a comfortable margin for the integrated plant, it is said to be cheaper for the non-integrated mills to buy wire. Prices are given on page 171.

Structural Material.—Structural awards with shops here still are few and mostly of less than 200 tons. The Engineer's Office, Nashville, Tenn., recently awarded two barges for Mississippi trade to the Tredwell Construction Co., Midland, Pa., and three to the Marietta Mfg. Co., Point Pleasant, W. Va. About 1000 tons of steel will be required for these barges, and it is said that successful bidders are well covered. The Jones & Laughlin Steel Co. has taken 125 tons for a machine shop for the Clearfield Machine Shop, Clearfield, Pa., while the McClintic-Marshall Co. reports 150 tons for a coke bin and conveyor for the Seaboard By-product Coke Co., Jersey City, 150 tons for three machine shops for the Amy Supply Base, Brooklyn; 150 tons for a truss span and suspension bridge placed by the Baldwin Locomotive Works, for erection in Colombia, and 350 tons for four schools in Johnstown, Pa. Plain material still is inactive and the quotation of 2c., Pittsburgh, is merely an asking price. Buyers regard 1.90c. as maximum, and believe that if they had a sizable tonnage to place they would be able to get an even lower price. Plain material prices are given on page 171.

Wire Products.—Jobbers anticipating a good fall business are showing more interest in the market, at least to the extent of trying to find out if present prices are to be maintained over the remainder of the year. None of the manufacturers will give this assurance, however, and consequently, purchases continue of a hand-to-mouth order. There is no tangible evidence of important deviation from the stabilized bases, but the market is extremely quiet.

We quote wire nails at \$2.75 base per keg, Pittsburgh, and bright basic and Bessemer wire at \$2.50 base per 100 lb., Pittsburgh.

Steel Rails.—The official quotation of 2c., Pittsburgh, for light rails is finding little or no basis in sales. Inquiries are rather few and usually for small tonnages, and it is reported that rails rolled from new steel have been offered as low as 1.90c. The lowest price reported on these rails rolled from old standard sections is \$40 per gross ton, but that price figures back to about 1.80c. per lb.

We quote 25 to 45-lb. sections, rolled from new steel, 2c.; rolled from old rails, 1.80c. to 1.90c.; standard rails, \$45 mill for Bessemer and \$47 for open-hearth sections.

Nuts, Bolts and Rivets.—No appreciable improvement yet is noted in the demand for nuts and bolts and quotations are largely nominal. Track bolts appear to have definitely settled to \$4 per 100-lb. base for lots of 200 kegs or more. For lots of less than 200 kegs, there is an increasing disposition among makers to receive the card of extras adopted in December, 1917, which provided for an extra charge of 1c. per lb. Such a charge is made for small lots of rivets, and bolt makers feel they are entitled to the same advance on small lots. Rivets still are inclined lower and there is not much basis in sales for prices of more than 2.65c. for large structural and ship rivets and 2.75c. for large boiler rivets. Prices and discounts are given on page 171.

Spikes.—The railroads are specifying more freely against old orders for large spikes and a fair amount of interest is being shown in small spikes, particularly by jobbers serving the coal companies. Business is better, but still far from active, and does not provide a real test of the revised quotations. Prices are given on page 171.

Cold-Finished Steel Bars.—There are two "official" quotations, the American Steel & Wire Co. naming 2.75c. base, and the independents 2.80c. The latter price is reported to have ruled on several carloads taken by one maker in this district, but on sizable orders it is doubtful whether buyers would have to pay more than 2.75c., if, indeed, they would have to pay that price. The absence of price cutting may be explained by the fact that inquiries run generally to small and unattractive proportions and also because makers who have to buy their hot-rolled bars have found it hard to interest the mills in orders at less than 1.90c. base.

Hoops and Bands.—The market is quotable from 2.50c. to 2.60c. base, Pittsburgh. The higher price is that of the Steel Corporation, while the independents are quoting 2.50 and 2.55c. So little is going on that quotations are entirely nominal.

Cotton Ties.—Although harvesting of the new cotton crop has started in the more southerly parts of the producing area, demand for the ties remains disappointingly small. Makers are quoting \$1.35 per bundle of 45-lb., Pittsburgh, for July shipment, and are indisposed to shade this price to meet German competition.

Plates.—Several fair-sized inquiries are before makers that are slow to close because of the difficulty buyers and sellers have had in getting together on prices. About 2000 tons will be required for seven tanks recently placed with the Riter-Conley Co. by the South Penn Oil Co., and the Pittsburgh-Des Moines Steel Co. has not yet covered on the plates required for the tanks recently awarded it by the U. S. Shipping Board. These tanks call for about 2800 tons of plates, but the company has some in stock and some Government stocks also are available and the actual tonnage now sought is 1200 tons. A definite quotation of 1.85c. has been made on plates and there are intimations that as low as 1.75c. would be made to secure an order involving a couple of thousand tons.

We quote sheared plates 1/4 in. and heavier, tank quality, at 1.80c. to 1.90c. f.o.b. Pittsburgh.

Iron and Steel Pipe.—Business does not improve appreciably despite the recent price cuts, and until the oil situation becomes more settled and there is more building throughout the country, it is doubtful whether demand will increase much because there is considerable shifting and sizing up of stocks among jobbers and the oil companies seem to have ample supplies for immediate production requirements. Some line pipe inquiries are reported to be out, but they are regarded as feelers in view of the fact that most of the important oil producers have surplus stocks which they are offering at substantial concessions from the mill quotations. If there is any price cutting by the mills, it is largely in line pipe in competition with resale offers. Discounts are given on page 171.

Sheets.—The American Sheet & Tin Plate Co. has enjoyed a fairly good increase in orders and specifications, and mill operations are at least 10 per cent heavier than they were a fortnight ago. Sheet mill

operations in general are somewhat heavier than they have been, as some business was secured or had accumulated during the recent period of suspension by a number of mills operating under an agreement with the Amalgamated Association of Iron, Steel and Tin Workers. Concessions of \$5 per ton in black and galvanized sheets have been rather freely offered by some makers and it is currently stated that even less than 3.25c. on black and 4.25c. on galvanized could be done on really sizable orders. On blue annealed sheets the more common quotation now is 2.50c. for the base gage. Prices are given on page 171.

Steel Chain.—Effective July 18, leading manufacturers have revised prices, the new quotation showing declines of 75c. per 100-lb. in proof, BB, and BBB grades in sizes 3/16-in. to 1/2-in.; of 35c. per 100-lb. in sizes from 9/16-in. to 1 1/4-in.; 75c. per 100-lb. in wagon chain, and 50c. per 100-lb. in steel loading chain. The new base for 1-in. proof coil chain is \$5.90 per 100-lb., with the old differentials applying on sizes from 9/16-in. to 1 1/4-in., while on the sizes from 1/2-in. down the differentials have been cut 40c. per 100-lb. The new prices f.o.b. Pittsburgh, per 100-lb. follow:

	Proof	BB	BBB
3/16-in.	\$10.25	\$11.75	\$12.75
1/4"	9.25	10.75	11.75
5/16	7.75	9.00	9.50
3/8	6.50	7.75	8.25
7/16	6.25	7.50	8.00
1/2	6.00	7.25	7.75
9/16	6.65	7.65	8.15
5/8 to 11/16	6.55	7.55	8.05
3/4 to 13/16	6.40	7.40	7.90
7/8 to 15/16	6.15	7.15	7.65
1-in. to 1 1/4-in.	5.90	6.90	7.40

Cut Nails.—Prices have been revised by leading makers in keeping with the recent decline in wire nails. Carloads now are quotable at \$3 to \$3.25 per 100-lb. keg f.o.b. mill, or \$3.50 delivered Pittsburgh.

Hot-rolled and Cold-rolled Strips.—Independent makers of cold-rolled strips have met the price of \$4.25, base, recently announced by American Steel & Wire Co. The market on hot-rolled strips is quotable from 2.50c. to 2.60c. base, with most makers quoting the higher figure. Extra for pickling hot-rolled strips, 1 1/2-in. and wider, has been cut 15c. per 100-lb. Narrower stock does not share in this change. Extra for annealing has been reduced from 50c. to 30c. per 100-lb. Quantity, cutting and slitting differentials have not been changed. The reduction in pickling and annealing charges is expected to stop price concessions, as it is stated that sales recently made at 2.35c. and 2.40c. merely anticipated this change, which it seems has been under discussion for some time. Business is rather spasmodic.

Steel Skelp.—The new base of 2c. does not appear to be stimulating the demand and makers who have quoted this price against the small inquiries which have been current have failed to obtain the orders, the report being a lower price has been quoted.

Boiler Tubes.—Leading makers of charcoal iron boiler tubes have adopted new discounts, effective July 14, cutting prices from \$14 to \$20 per ton. The change has been accompanied by a regrouping of the sizes to conform more closely with those employed in quoting steel boiler tubes. Manufacturers in this district are doing very little business, but it is reported that Eastern makers are fairly busy. One important Eastern producer has been running for about two months at 66 per cent capacity and has a sufficient number of orders to maintain this rate of operation for several weeks. The National Tube Co. has not yet made public the new discounts on seamless tubes and for this reason no discounts are published on these tubes on page 171. Other discounts are given on page 171.

Tin Plate.—Demand for tin plate for perishable food containers still is purely hand to mouth and the indications are that the year is going to be a very lean one in this kind of material. Manufacturers supplying tin plate for other kinds of containers are getting a fair amount of business and there is an impression that last quarter of the year will develop a fair amount of

general line business. There is general observance of the stabilized base of \$5.75 per base box, Pittsburgh, for standard coke.

Coke and Coal.—The recent inquiry of Wickwire Spencer Steel Corporation, Buffalo, for 30,000 tons of furnace coke for August and September shipment still is under negotiations. The impression prevails that this business will be placed at not over \$3 per net ton oven and may possibly go under that price, because producers look upon these months as likely to be lean ones and are pretty anxious for the business. There is no change in the spot furnace coke situation, the market being quotable from \$2.75 to \$3 per net ton oven. Large operators are not disposed to go below the latter price, but the smaller producers seem able to keep going presumably because of a very favorable wage scale and to take business at 2.75c. Spot foundry coke is quotable generally from \$4 to \$4.25, but occasionally some loaded cars can be bought as low as \$3.75, while on the other hand \$4.50 is the price to consumers on some choice brands. Eastern by-product plants are finding it difficult to compete with Connellsville coke at present prices because of the high freight rate on coal. Meanwhile, some of the steel companies having by-product ovens have such heavy accumulations of coke that it is reported that some made sales were made as low as \$1.25 a ton at oven. The coal market still is dull and weak, especially on by-product grades, which lately have sold as low as \$1.50 per net ton, from non-union districts, and rarely commands more than \$1.65 for run of mine grade. Non-union steam coal is quotable from \$1.50 to \$2 and gas coal from \$2.25 to \$2.50.

Old Material.—No material change is noted in the general situation. Interest in the market on the part of melters is extremely light and dealers seem unwilling to add to their stocks, in the lack of any tangible evidence of increased steel plant and foundry operations in the near future. There is so little business doing that prices of necessity are nothing more than appraisals of what might possibly be done.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh.....	\$12.00 to \$12.50
No. 1 cast cupola size.....	16.00 to 16.50
Re-rolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Parkersburg and Huntington, W. Va.; Franklin, Pa., and Pittsburgh	13.50 to 14.00
Compressed sheet steel.....	9.50 to 10.00
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist..	8.00 to 8.25
Railroad knuckles and couplers.....	12.50 to 13.00
Railroad coil and leaf springs.....	12.50 to 13.00
Railroad grate bars.....	10.00 to 10.50
Low phosphorus melting stock, bloom and billet ends, heavy plates, 1/4-in. and thicker	16.00 to 16.50
Railroad malleable	12.00 to 13.00
Iron car axles.....	18.00 to 19.00
Locomotive axles, steel.....	17.50 to 18.00
Steel car axles.....	14.50 to 15.00
Cast iron wheels.....	13.00 to 13.50
Rolled steel wheels.....	12.50 to 13.00
Machine shop turnings.....	7.00 to 7.50
Sheet bar crop ends at origin.....	12.00 to 12.50
Heavy steel axle turnings.....	8.50 to 9.00
Short shoveling turnings.....	8.00 to 8.50
Heavy breakable cast.....	13.50 to 14.00
Stove plate	12.00 to 12.50
Cast iron borings.....	7.50 to 8.00
No. 1 railroad wrought.....	12.00 to 12.50

For use in designing and detailing roof construction the Federal Cement Tile Co., Chicago, has published a pamphlet of 20 blueprint sheets of standards on a scale suitable for use in the drafting room. The company has also issued an unusually attractive booklet covering the various styles of tiles which it makes for the so-called "indestructible roof." This publication includes the interior and exterior views of plants showing various applications, and also construction diagrams. The roofing tiles are made of pre-cast stone concrete reinforced.

Chicago

CHICAGO, July 19.

The new steel prices announced two weeks ago are no longer holding in this territory. Weakness is more pronounced in some commodities than in others. Last week a public letting of 164 tons of plates by a Western railroad brought out the unusually low price of 1.80c., mill, or the equivalent of 1.45c., Pittsburgh. At the present moment there does not appear to be a ruling market price on either plates or structural shapes, and sheets likewise are soft, although not in such a pronounced degree. Some shading is also reported on mild steel bars, but some business is still moving at 1.90c., Pittsburgh. The new wire prices are holding rather firmly, but without bringing out much business.

The trend of pig iron prices is still downward, a further slump of 50c. a ton having taken place this week.

There have been few changes in the operating situation. The Illinois Steel Co. continues to operate eight blast furnaces and is producing steel at 30 per cent of capacity. The Inland Steel Co. did not blow out a blast furnace last week as intended, but expects to take such action within the next few days unless there is an unexpected turn for the better in bookings. At present, however, it still has two out of three furnaces in blast while its steel output is on a 25 per cent basis. Its rail carbon steel bar mill at Chicago Heights is idle this week, as is the mill of the Calumet Steel Co. at the same place. The Interstate and Republic bar iron mills at East Chicago are both inactive this week, but expect to resume operations soon. The South Chicago steel works and bar mill of the Interstate Iron & Steel Co. are operating on a fairly satisfactory basis, while the Wisconsin Steel Works has one out of three blast furnaces and about 25 per cent of its mill capacity active.

Pig Iron.—Buying is light and going prices are about 50c. below those of a week ago. In fact, many melters regard present furnace quotations as at the bottom or so close to bottom that little risk would be involved in placing orders for iron. It is true that the average price for the 10-year period before the war was \$2 or \$3 under the present quotation, but there were two years in that decade when prices were considerably higher than they are now. A further factor to consider in judging the present level of the market is the added burden of increased freight which enters into the costs of pig iron producers as it does in the costs of all other manufacturers. Notwithstanding the fact that price considerations no longer deter buying, purchases of size are not being made. This fact merely indicates that melters have little work ahead and therefore have no reason to buy much iron. Until the industrial readjustment now going on results in increased foundry operations, the hand-to-mouth buying which has characterized the pig iron market for months will continue. The fact that the liquidation of pig iron prices is completed, or nearly so, means, however, the one important obstacle to the revival of business has been removed. The Beloit Iron Works has not yet closed for 150 tons of 3 per cent foundry and 75 tons of charcoal. The American Radiator Co. is reported to have bought 3000 tons of iron for its Western and Northern plants, but confirmation is lacking. A carload of resale copper free low phosphorus has been sold at \$40 delivered Chicago.

Quotations on Northern foundry, high phosphorus, malleable and basic irons are f.o.b. local furnace and do not include a switching charge averaging 70c. per ton. Other prices are for iron delivered at consumers' yards, or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil.	
1.50, delivered at Chicago.....	\$36.00 to \$36.50
Northern coke, No. 1, sil. 2.25 to 2.75	19.00 to 19.50
Northern coke foundry, No. 2, sil.	
1.75 to 2.25.....	18.50 to 19.00
Northern high phos.....	18.50 to 19.00
Southern foundry, sil. 1.75 to 2.25....	26.67
Malleable, not over 2.25 sil.....	18.50 to 19.00
Basic.....	18.50 to 19.00
Low phos., Valley furnace, sil. 1 to 2	
per cent, copper free.....	\$5.00
Silvery, sil. 8 per cent.....	37.58

Ferroalloys.—A carload of resale spiegeleisen has

been sold at less than \$37, delivered, Bettendorf, Iowa. Generally all of the ferroalloys are exceedingly quiet.

We quote 78 to 82 per cent ferromanganese, \$78 delivered; 50 per cent ferrosilicon, \$80 delivered; spiegeleisen, 18 to 22 per cent, \$36 delivered.

Structural Material.—Lettings of steel work have been fairly heavy the past two weeks, but without having a sustaining effect either on the prices of the mills or of the fabricators. Plain material has been bought at 1.80c., Pittsburgh, and on some tonnages even lower prices are reported. Fabricating bids are also low. On 1200 tons for a local job, the successful bid was \$61 per ton delivered. On the Ohio State University stadium involving 4500 tons of steel, less than \$80 per ton erected has been bid. An award is expected this week. On 2600 tons for the United States Window Glass Co. plant at Shreveport, La., the fabricating award of which was announced last week, the successful bid was \$70 delivered. The erection was let at \$12 per ton, while the erection of about 800 tons of old work was awarded at \$14 per ton. The steel for the Shreveport job will be rolled by a local mill and 1200 tons for the repair of the Armour Grain Co. elevator, Chicago, will also be supplied by a Chicago mill. Fabricating awards include:

Chicago & Northwestern Railroad elevator, Armour Grain Co. lessee, Chicago, 1225 tons, to Morava Construction Co.

Federal Reserve Bank, Minneapolis, foundation work, 835 tons, to Minneapolis Steel & Machinery Co.

Lake Shore Trust & Savings Bank, Chicago, 339 tons, to Union Foundry Co.

Pressure tank, Los Angeles, Cal., 144 tons, to Baker City Iron Works.

A. M. Castle Co., Chicago, warehouse, 330 tons, to Milwaukee Bridge Co.

Joseph Schlitz Brewing Co., Milwaukee, Commercial Building and reconstruction Schlitz Palm Garden, 270 tons, to Milwaukee Bridge Co.

Pending business includes:

Joliet High School, Joliet, Ill., 800 tons, Hansell-Elcock Co., low bidder.

Missouri Pacific Railroad, two 100-ft. deck turntables, 175 tons.

Mark Mfg. Co., new roof, butt-weld pipe mill, Evanston, Ill., 120 tons.

Orpheum Theater, Wichita, Kan., 140 tons, general contract awarded to Vaughan Construction Co., Omaha.

The mill quotation is 1.80c. to 2c., Pittsburgh, which takes a freight rate of 38c. per 100 lb. for Chicago delivery. Jobbers quote 3.03c. for materials out of warehouse.

Plates.—The stabilized prices generally adopted two weeks ago are rapidly becoming nominal so far as this section is concerned. In a public letting of 164 tons of tank plates and 13½ tons of structural shapes by the Burlington Railroad last week, the successful bid on the plates was 1.80c. f.o.b. Western mill, while the structurals were awarded at 2.18c., delivered Chicago. The fact that such low prices were brought out by a small tonnage emphasizes the pronounced weakness and uncertainty of the market. It is evident that competition is keen for such business as is appearing and that the extent to which mills will deviate from the prices announced a fortnight ago depends on the size of the tonnage offered and the character of the specifications. At present writing, it is impossible to name a ruling going price on tank plates. A local mill has been awarded 3000 tons of steel, principally plates, to be used on the repair of 400 gondola cars for the Illinois Central by the Haskell & Barker Car Co. That considerably more car repair work may be looked forward to as a source of steel tonnage is indicated by the fact that the New York Central has issued an inquiry for figures on the repair of 10,000 freight cars of various types. Oil companies continue to undertake work involving plates. The Magnolia Petroleum Co., Beaumont, Tex., is in the market for three storage tanks requiring 600 tons, while the Standard Oil Co. is taking bids on stills for Whiting, Ind., involving about 450 tons. Other inquiries include one from the Allis-Chalmers Mfg. Co. for 350 tons of plates.

The mill quotation is 1.80c. to 2c. Pittsburgh, the freight to Chicago being 38c. per 100 lb. Jobbers quote 3.03c. for plates out of stock.

Bolts and Nuts.—The market continues weak and the prices quoted on page 171 are to be regarded as.

the top of the market rather than as ruling discounts. The tendency of sellers is either to revise the discounts downward or to waive part or all of the freight from Pittsburgh. Revisions of discounts include small rivets, which some makers are quoting at 70 and 10 off list; large machine bolts, which have been quoted at as low as 70 and 5 off, and large carriage bolts, on which 65 and 10 off has been named. The railroads continue to figure in the market. The Louisville & Nashville has bought 700 kegs of nuts and the Illinois Central is inquiring for 300 kegs of rivets. The Ford Motor Co. is reported to have placed a large order for bolts and nuts last week. Jobbers are buying sparingly and the agricultural implement makers remain out of the market.

Jobbers quote structural rivets, 4.03c.; boiler rivets, 4.13c.; machine bolts up to $\frac{3}{4}$ x 4 in., 60 per cent off; larger sizes, 55 off; carriage bolts up to $\frac{3}{4}$ x 6 in., 55 off; larger sizes, 50 and 5 off; hot pressed nuts, square and hexagon tapped, \$3 off; blank nuts, \$3.25 off; coach or lag screws, gimlet points, square heads, 60 per cent off. Quantity extras are unchanged.

Bars.—Prices on mild steel bars are as ill-defined as those on plates and structural shapes. Demand is of much the same character as heretofore. Car repair business is steadily growing larger in scope as indicated in other paragraphs, and there continues to be a fair amount of reinforcing work. A Masonic temple at Davenport, Iowa, will require 500 tons and a grain elevator for the Burlington Railroad at St. Joseph, Mo., 200 or 300 tons. Railroad purchases of bar iron are still small, involving 100 to 200 tons or less. A current inquiry from the St. Paul Railroad calls for 150 tons. Prices range from 1.90c. to 2c., Chicago, and even lower prices have been reported. There has been no material change in the demand for rail carbon steel bars, and prices have slumped to a maximum of 1.90c., Chicago. Bed manufacturers are prominent among present buyers of hard steel bars.

Mill prices are: Mild steel bars, 1.85c. to 1.90c., Pittsburgh, taking a freight of 38c. per 100 lb.; common bar iron, 1.90c. to 2c., Chicago; rail carbon, 1.90c. to 2c., mill or Chicago.

Jobbers quote 2.93c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars is 4.35c. for rounds and 50c. extra for flats, squares and hexagons. Jobbers quote hard and medium deformed steel bars at 2.38c. base.

Sheets.—The market is weak and going prices are below those generally announced two weeks ago. On No. 28 galvanized, 4.25c., Pittsburgh, is rather commonly quoted, while 4.10c. has been done. On No. 28 black, 3.25c., Pittsburgh, is the ruling quotation and as low as 3c. has been named. On No. 10 blue annealed, 2.45c., Pittsburgh appears to be the market. Demand is still subnormal, but compares favorably with that for plates, shapes and bars. One important Western maker is employing about two-thirds of sheet mill capacity. Japan continues to buy light gage sheets; in fact, more of this class of business is being offered than local mills care to take.

Mill quotations are 3.25c. for No. 28 black; 2.45c. for No. 10 blue annealed and 4.25c. for No. 28 galvanized, all being Pittsburgh prices subject to a freight to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stocks, No. 10 blue annealed, 3.68c.; No. 28 black, 4.90c.; No. 28 galvanized, 5.90c.

Railroad Rolling Stock.—The Mather Stock Car Co. is contemplating entering the market for 500 steel center sills for stock cars.

Warehouse Prices.—Further price adjustments by jobbers include reductions on chain and charcoal iron boiler tubes. Chain has been reduced 75c. for sizes 3/16 in. to $\frac{1}{2}$ in. and 35c. for sizes 9/16 in. to 1 $\frac{1}{4}$ in. Prices are now \$11.88 on 3/16 in., \$7.63 on $\frac{1}{2}$ in., \$7.93 for 9/16 in. and \$7.53 for 1 $\frac{1}{4}$ in. Charcoal iron boiler tubes have been reduced 3 $\frac{1}{2}$ c. per foot, 4 in. now being quoted at 59 $\frac{1}{2}$ c.

Cast Iron Pipe.—Prices have settled to a maximum of \$40, Birmingham, for 6-in. and larger. Lettings have been fairly heavy during the past week and some attractive business is in prospect. Detroit is preparing to ask for figures on 4200 tons of 42-in. and 1500 tons of 8-in. Hammond, Ind., will ask bids soon on 3000 tons of 36-in. This week Akron, Ohio, receives bids

for a third time on 6500 tons of 48-in. Recent lettings include:

Fort Wayne, Ind., 470 tons, to United States Cast Iron Pipe & Foundry Co.

Forest Lake, Minn., 200 tons, to United States Cast Iron Pipe & Foundry Co.

Faribault, Minn., 100 tons, to James B. Clow & Sons.

Dubuque, Iowa, 150 tons, to United States Cast Iron Pipe & Foundry Co.

Evansville, Ind., 100 tons, to National Cast Iron Pipe Co.

Pending business includes:

Akron, Ohio, 1000 tons, 4 to 16-in., National Cast Iron Pipe Co. low bidder.

Duluth, Minn., 600 tons, Lynchburg Foundry Co. low bidder.

Decatur, Ill., 100 tons, bids from general contractors, in July 18, to be sublet to pipe manufacturer.

Harrodsburg, Ky., 200 tons, original bids rejected, new bids in July 29.

Detroit, 250 tons of 24-in., July 22.

Milwaukee, 275 tons of 16-in., July 25.

Two Rivers, Wis., 150 tons of 4- and 6-in., July 28.

Manitowoc, Wis., one carload 6-in., July 28.

We quote per net ton, f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., \$52.10; 6-in. and above, \$49.10; class A and gas pipe, \$3 extra.

Rails and Track Supplies.—As forecast last week, tie plates have been reduced, the new price being 2.30c. Chicago mill. The demand for fastenings and car wheels improves slowly as the railroads gather their car repair and maintenance of way programs under way. The Illinois Central has bought 4000 kegs of track spikes. The Chicago Surface Lines have ordered 4000 tons of girder rails from the Lorain Steel Co.

Standard Bessemer rails, \$45; open-hearth rails, \$47; light rails rolled from new steel, 1.90c. f.o.b. makers' mills.

Standard railroad spikes, 3c., Pittsburgh; track bolts with square nuts, 4c., Pittsburgh; steel tie plates, 2.30c., and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 2.30c., f.o.b. makers' mills.

Wire Products.—Considering the fact that summer is a dull season, present demand is of fair proportions. Jobbers, however, continue to hold back, notwithstanding the fact that their lack of stocks often handicaps them in filling the orders of their customers. As fall approaches, more generous buying is looked for. Railroad purchases continue small. For mill prices see finished iron and steel f.o.b. Pittsburgh, page 171.

We quote warehouse prices, f.o.b. Chicago: No. 9 and heavier black annealed wire, \$3.38 per 100 lb.; No. 9 and heavier bright basic wire, \$3.53 per 100 lb.; common wire nails, \$3.48 per 100 lb.; cement coated nails, \$2.90 per keg.

Old Material.—Consumers continue to hold aloof from the market and prices of some grades have again declined. Such purchases as have been made by users confirm the quotations given below. A large local foundry bought 500 tons of selected heavy melting at \$10.50 per gross ton. A bar iron mill purchased 700 tons of No. 1 busheling at \$8.25 and \$8.50 per net ton. Railroad lists include the Rock Island, 3750 tons; the St. Paul, 1200 tons, and the Chicago & Alton, 550 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	\$15.00 to \$15.50
Relaying rails	27.50 to 30.00
Car wheels	12.50 to 13.00
Steel rails, rerolling	12.00 to 12.50
Steel rails, less than 3 ft.	11.50 to 12.00
Heavy melting steel	10.00 to 10.50
Frogs, switches and guards, cut apart	10.00 to 10.50
Shoveling steel	9.50 to 10.00
Low phos. heavy melting steel	13.00 to 13.50
Drop forge flashings	6.00 to 6.50
Hydraulic compressed sheet	6.50 to 7.00
Axle turnings	7.00 to 7.50

Per Net Ton	
Iron angles and splice bars	13.25 to 13.75
Steel angle bars	9.50 to 10.00
Iron arch bars and transoms	13.50 to 14.00
Iron car axles	17.50 to 18.00
Steel car axles	12.00 to 12.50
No. 1 busheling	8.25 to 8.75
No. 2 busheling	5.75 to 6.25
Cut forge	8.75 to 9.25
Pipes and flues	5.50 to 6.00
No. 1 railroad wrought	9.00 to 9.50
No. 2 railroad wrought	8.50 to 9.00
Steel knuckles and couplers	10.25 to 10.75
Coil springs	11.50 to 12.00
No. 1 machinery cast	12.50 to 13.00
Low phos. punchings	10.50 to 11.00
Locomotive tires, smooth	9.75 to 10.25
Machine shop turnings	3.00 to 3.50
Cast borings	4.50 to 5.00
Stove plate	11.50 to 12.00
Grate bars	10.00 to 10.50
Brake shoes	9.75 to 10.25
Railroad malleable	11.25 to 11.75
Agricultural malleable	11.25 to 11.75
Country mixed	7.00 to 7.50

New York

NEW YORK, July 19.

Pig Iron.—Following the increased inquiry reported last week, the market dropped back to the dullness which had characterized many weeks. The sales made within the last few days have been few and at low prices. There is keen competition between Buffalo and eastern Pennsylvania irons. The latter is selling as low as \$20 furnace base, and the former at \$19. A sale of 500 tons was made to a Connecticut melter for prompt delivery on a basis of about \$20 eastern Pennsylvania furnace. A sale of 800 tons is about to be closed at \$21.50, eastern Pennsylvania furnace, for No. 2X. A marked feature of the limited buying is that foundries are urging prompt shipment. Some Belgian iron has been offered at low prices, but this iron does not seem to be attractive to anyone. One reason given is that the iron is not of satisfactory analysis, being high in phosphorus, but a more important reason is that melters hesitate to place orders for foreign iron on a declining market when time of delivery is uncertain.

We quote delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$5.46 from Buffalo and \$6.16 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25..	\$24.02 to \$25.02
East. Pa. No. 2X fdy., sil. 2.25 to 2.75..	23.02 to 24.52
East. Pa. No. 2 fdy., sil. 1.75 to 2.25..	22.52 to 23.52
Buffalo, sil. 1.75 to 2.25.....	24.46 to 25.46
No. 2 Virginia, sil. 1.75 to 2.25.....	29.16 to 30.16

Ferroalloys.—There is so little inquiry for ferromanganese and spiegeleisen that the market is not well defined. Nominally ferromanganese is quoted at \$70, delivered, for the domestic and \$70, seaboard, for the imported, but these prices would be shaded if any real business were to be had. Spiegeleisen is available at \$26, furnace. Ferrotungsten is quoted at 42c. to 43c. per lb. of contained metal, duty paid; ferrovanadium is lower at \$4.50 per lb. of contained vanadium. Manganese ore cannot be sold at any price, but the nominal quotation is 22c. per unit, seaboard. We quote prices as follows:

Ferromanganese, domestic, delivered, per ton..	\$70.00
Ferromanganese, British, seaboard, per ton..	\$70.00
Spiegeleisen, 20 per cent, furnace, per ton..	\$26.00
Ferrosilicon, 50 per cent, delivered, per ton..	\$65.00
Ferrotungsten, per lb. of contained metal, 42c. to 43c.	
Ferrochromium, 6 to 8 per cent carbon, 60 to	
70 per cent Cr., per lb. Cr.....	16c. to 16.50c.
Ferrovanadium, per lb. of contained vanadium..	\$4.50
Ferrocobaltititanium, 15 to 18 per cent, net	
ton	\$200.00
Ferrocobaltititanium, 15 to 18 per cent, 1	
ton to carloads, per ton.....	\$220.00
Ferrocobaltititanium, 15 to 18 per cent, less	
than 1 ton, per ton f.o.b. Niagara Falls,	
N. Y.	\$250.00
Manganese ore, foreign, per unit, seaboard.....	22c.

Cast-Iron Pipe.—The volume of small orders is satisfactory and prices remain about the same. We quote, f.o.b. New York, carload lots, as follows: 6-in. and larger, \$52.30; 4-in. and 5-in., \$57.30; 3-in., \$67.30, with \$4 additional for Class A and gas pipe.

Warehouse Business.—The market shows no change despite the recent reduction of prices in this district. No change in prevailing prices is reported this week, but some shading of current quotations is reported in special cases. Warehouses handling wrought iron and steel pipe, boiler tubes, etc., have not yet issued any official revision of prices to meet the reductions of the mills on both wrought iron and steel pipe. Quotations on inquiries are proportionately lower since the mill reduction, but until the market becomes more stable, probably no official schedule will be issued by these warehouses. We quote prices on page 186.

High-Speed Steel.—The market continues extremely inactive with few orders and considerable shading of prices. We quote 18 per cent tungsten high speed steel at 90c. per lb., with sales reported at 85c. per lb. With the new tariff in force, it is believed that there will be a slight increase in prices, as with the protection afforded, the cost of tungsten will undoubtedly increase.

Finished Iron and Steel.—Specific orders of large size have brought out low prices, as was expected. On 1120 tons of structural shapes 1.85c., Pittsburgh, was

done and on 1200 tons, 1.80c. On 900 tons of plates for locomotives the contract basis was 1.70c., Pittsburgh. On 300 tons of bars the basis of the purchase was 1.70c., Pittsburgh. A round volume of bars largely for reinforced concrete work is under active negotiation, one lot of 1100 tons, another of 400 and an export order said to total 3800 tons. Not much as yet has materialized in the way of railroad business in the East. The Lehigh Valley is in the market for part repairs and part rebuilding of 5000 cars, principally box cars; 400 additional cars are to be repaired by the Haskell & Barker Car Co. for the Illinois Central. It is expected that the New York Central will come into the market for considerable locomotive repair work. The Illinois Central, taking prices on 500 tons of forgings for the repairs and rebuilding of locomotives, is expected also to buy 140 new locomotives. Little new work has appeared in fabricated steel lines, but the following awards are noted: For a coal breaker for the Lehigh Coal & Navigation Co., 2200 tons, to the Bethlehem Steel Bridge Corporation; for the Boston & Maine, 125 tons, to the McClintic-Marshall Co.; for the Dental and Oral College, East Thirty-fourth Street, 250 tons, to the Hinkle Iron Co.; for the Rhinelander apartment, Lexington Avenue and Ninetieth Street, 900 tons, to the Hay Foundry & Iron Works, and for the New York Telephone Co., at 146th Street and Convent Avenue, 600 tons, to the Hinkle Iron Co.

We quote for mill shipments, New York, as follows: Soft steel bars, 2.18c. to 2.28c.; plates, 2.18c. to 2.38c.; structural shapes, 2.18c. to 2.38c.; bar iron, 2.28c.

Old Material.—There are no signs of improvement in the scrap market, the chief activity being in heavy melting steel, pipe and stove plate. Dealers in scrap do not look for more activity until steel mills start operating at greater capacity.

Buying prices per gross ton, New York, follow:

Heavy melting steel.....	\$6.50 to \$7.50
Rerolling rails	9.50 to 10.00
Relaying rails, nominal.....	37.50 to 40.00
Steel car axles.....	9.50 to 10.00
Iron car axles.....	16.00 to 17.00
No. 1 railroad wrought.....	10.00 to 10.50
Wrought iron track.....	7.25 to 7.50
Forge fire	5.00 to 5.50
No. 1 yard wrought, long.....	8.50 to 9.00
Light iron	2.00 to 2.50
Cast borings (clean).....	3.50 to 4.00
Machine-shop turnings	2.50 to 3.50
Mixed borings and turnings.....	2.50 to 3.00
Iron and steel pipe (1 in. diam., not	
under 2 ft. long).....	7.00 to 7.50
Stove plate	8.50 to 9.00
Locomotive grate bars.....	8.50 to 9.00
Malleable cast (railroad).....	7.00 to 7.50
Old car wheels.....	10.00 to 10.50

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, follow:

No. 1 machinery cast.....	\$16.00 to \$17.00
No. 1 heavy cast (columns, building	
materials, etc.), cupola size.....	14.00 to 15.00
No. 1 heavy cast, not cupola size.....	13.00 to 14.00
No. 2 cast (radiators, cast boilers,	
etc.)	9.50 to 10.50

Boston

BOSTON, July 19.

Pig Iron.—Buying of eastern Pennsylvania iron silicon 1.75 to 2.25, by the Gurney Heater Co., Framingham, Mass., for last half delivery, featured the market the past week. The company is credited with taking 2000 tons, half at \$21 furnace or \$25.06 delivered, and half at a slightly higher price. Some furnaces could not meet manganese and phosphorus requirements. Other eastern Pennsylvania iron sales include 200 tons, silicon 2.25 to 2.75, to a Massachusetts foundry, third quarter delivery, at \$21 furnace, and 300 tons, delivery next three months, to another Massachusetts melter at the same price. Differentials in these cases were ignored. No. 2X iron is offered as low as \$20.50. The best price obtained this week was \$25.75 furnace or \$29.81 delivered, for No. 1X, August delivery, by a furnace with \$1 differentials, from a Massachusetts foundry. Sales of Buffalo are confined to car lots, third quarter shipment, on a basis of \$21 furnace for No. 2X Buffalo. No. 2 plain is offered at \$20.50. The Griffin Wheel Co., Chelsea, Mass., wants 300 tons, silicon 2.25 to 2.75, third quarter delivery, and about a dozen other melters 100 to 300 tons, mostly No. 2

plain or No. 2X. A Connecticut foundry bought 100 tons malleable at \$24 furnace. Malleable is offered at \$22, with a long freight, to \$26 furnace. A small tonnage of Alabama, silicon 2.75 to 3.25, was taken by a Massachusetts melter at \$36.02 dock, Providence. Delivered pig iron prices follow:

East. Penn., sil. 2.25 to 2.75.....	\$25.06 to \$28.81
East. Penn., sil. 1.75 to 2.25.....	24.56 to 28.31
Buffalo, silicon 2.25 to 2.75.....	25.96 to 28.96
Buffalo, silicon 1.75 to 2.25.....	25.96 to 28.46
Virginia, silicon, 2.25 to 2.75.....	31.08 to 33.08
Virginia, silicon 1.75 to 2.25.....	30.58 to 32.58
Alabama, silicon 2.25 to 2.75.....	32.16 to 32.66
Alabama, silicon 1.75 to 2.25.....	31.66 to 32.16

Warehouse Business.—Black and galvanized sheets have been cut 50c. per 100 lb. to \$5 and \$6 respectively. Small iron rivets are 10 per cent lower in some instances, the market being 50 to 60 per cent discount, while structural are generally down to \$5 per keg base and in light demand. Wire nails have dropped 25c. per keg to \$3.85 base, and bolt and nut quotations have been revised according to mill lists recently issued. Barbed wire is 25c. per 100 lb. cheaper. Consumption of iron and steel, if anything, is less than previously reported and warehouse interests are not making fresh mill contracts at any price.

Jobbers now quote: Soft steel bars, \$2.98 per 100 lb. base; flats, \$3.98 to \$4.08; concrete bars, \$2.50 to \$3.25; tire steel, \$4.20 to \$4.70; spring steel, open hearth, \$5.25; crucible, \$11.50; steel bands, \$3.63 to \$4.08; steel hoops, \$4.33; toe calk steel, \$5.25; cold rolled steel, \$4.35 to \$4.85; structural steel, \$2.98 to \$3.13; plates, \$3.08 to \$3.28; No. 10 blue annealed sheets, \$3.83; No. 28 black sheets, \$5; No. 28 galvanized sheets, \$6; refined iron, \$2.98 to \$5; best refined, \$4.75; Wayne iron, \$7; Norway iron, round, 1/4-in. to 2 1/4-in., 7.10c. per lb. net; other sizes, 7.75c. base.

Coke.—The reduction in prices announced a week ago by the New England producers of foundry coke, bringing spot and forward deliveries down to \$10.91 delivered where the local freight does not exceed \$3.40, failed to cause much of a ripple in the market. Virtually no increase in spot buying is noted and signing up of last half contracts has proceeded in about the same ratio as heretofore. About 40 per cent of contracted coke a year ago remains unbooked. New England by-product ovens in operation have not increased in number since last reports. One broker reports a sale of 15 cars, prompt shipment, Connellsville coke at \$4.50 f.o.b. ovens, which is a few cents below the base price on New England made fuel.

Old Material.—A partial revival of pig iron buying by the New England foundries the past month or so has not been followed by increased interest on their part in machinery cast, stove plate or other old material, as was anticipated by scrap dealers. The withdrawal of Pennsylvania steel mills from the market for heavier grades of scrap has but added to the unsatisfactory local situation. There is, perhaps a slightly easier market for stove plate, but prices have little opportunity to change in the absence of transactions. A Massachusetts melter took one car brake shoe scrap at \$11.50 delivered, and others, scattered car lots of No. 1 machinery cast at prices ranging from \$15.50 to \$16.90 delivered. A broker bought a car of turnings at \$2.50 f.o.b. shipping point, against an old mill contract, while New York brokers paid \$4.65, shipping point, for selected chemical turnings and is inquiring on 100 tons additional, but expects to buy for less money. The old material market otherwise is devoid of trading features. Yard owners are not trying to push sales inasmuch as much of the material on hand was bought at prices well above those ruling to-day.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast.....	\$17.00 to \$17.50
No. 2 machinery cast.....	15.50 to 16.00
Stove plate.....	14.50 to 15.50
Railroad malleable.....	14.00 to 15.00

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$5.50 to \$6.00
No. 1 railroad wrought.....	10.50 to 11.00
No. 1 yard wrought.....	8.50 to 9.00
Wrought pipe (1 in. in diameter, over 2 ft. long).....	6.50 to 7.00
Machine shop turnings.....	2.50 to 3.00
Cast iron borings, rolling mill.....	3.00 to 3.50
Cast iron borings, chemical.....	3.50 to 4.00
Forged scrap and turnings.....	2.50 to 3.00
Street car axles and shafting.....	5.00 to 5.50
Car wheels.....	12.00 to 12.50
Rerolling rails.....	11.50 to 12.00
	9.00 to 10.00

Buffalo

BUFFALO, July 19.

Pig Iron.—The total sales last week were 2700 tons but with the three sellers now active, inquiry seems to have fallen off. Improved shipping on old contracts by one furnace has brought about a withdrawal as to 1.75 to 2.25 silicon iron and this furnace for new business is now concentrating on lower silicon. Its sales last week—about 700 tons—were booked at prices ranging from \$20 to \$23 base. The most active competitor in the district sold 1500 tons at the same range; 100 tons of malleable was sold at \$23 and a quantity of iron (silicon almost 4 per cent) was booked at \$25. The first ore to be delivered at this port arrived last week and coupled with the fact that the consignee is known to be in the market for a considerable tonnage of coke, it is speculated that a furnace will be blown in August 1. Part of an order of 2200 tons bought by the largest buyer in this vicinity, went to a furnace here at \$19.75 base, silicon 1.25 to 1.75. Only three furnaces are in blast and one of these may be blown out the first of August. One seller has several small inquiries and no sales. The campaign to sell a steel-maker's iron seems to have come to a finish—no new inquiries and sales slightly under 500 tons.

We quote f.o.b. dealers' asking prices per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil.....	\$21.75 to \$22.75
No. 2X foundry, 2.25 to 2.75 sil.....	20.75 to 22.00
No. 2 plain, 1.75 to 2.25 sil.....	20.00 to 21.00
Basic (nominal).....	20.00 to 21.00
Malleable (nominal).....	21.00 to 22.00
Lake Superior charcoal.....	36.00

Finished Iron and Steel.—Improvement in inquiry with respect to volume and variety brings a better feeling, but orders have not improved to any appreciable extent. Previous price reductions this year did not bring out the optimism that recent reductions have developed. Consumption of material is certainly in excess of production and that long-looked for period of absolute liquidation of stocks is closer to hand. Bids have been opened in Albany within the week for a new State normal school at Cortland, N. Y. Operation is less than the preceding week—one open hearth now represents the entire program of a mill which has been fairly busy all year. Several small rail orders have been booked—one of 300 tons for the Toronto street railway system and another of 200 tons for the International Railway Co., Buffalo. Small orders for piling engage one mill. Railroad inquiry has not developed but improvement in the structural situation with particular reference to Buffalo is looked for with the settlement of the ironworkers' strike—the men agreeing to take a wage cut. Fair bar business developed with new prices; one order for 400 tons in three or four sizes and several orders for lesser tonnages. Two inquiries for pipe aggregate 1200 tons. No betterment in sheets came with new prices.

Warehouse Business.—Price changes have brought out a number of orders which apparently were held back awaiting the announcement. Dealers are not over enthusiastic as to the improvement, not seeing any permanency. Inability of mills to supply small tonnages continues to help warehouse business, in one instance the mill directing a prospective purchaser to the warehouse with a resulting order. Railroad inquiry, expected with the reopening of shops and the urgent need of repairs to rolling stock, has not developed into the order stage. In fact, there is but little railroad inquiry in hand and the instructions to purchasing agents not to buy seem to be still in effect.

We quote warehouse prices f.o.b. Buffalo as follows: Structural shapes, 3.05c.; plates, 3.05c.; plates, No. 8 gage, 3.65c.; soft steel bars and shapes, 2.95c.; hoops, 3.65c.; blue annealed sheets, No. 10 gage, 3.70c.; galvanized steel sheets, No. 28 gage, 5.80c.; black sheets, No. 28 gage, 4.80c.; cold rolled strip steel, 7.15c.

Coke.—Inquiry is better and there is a disposition in evidence that buyers are willing to buy ahead. One inquiry calls for delivery of 800 to 1000 tons per month.

Old Material.—If possible, dealers say, the market

is slower than any time this year. There is a particular weakness in cast scrap and a great surplus on the market. In heavy melting steel, the largest consumer has indicated a willingness to buy small tonnages but refuses to pay more than \$10 and insists that if his offer is taken, the material must be first grade.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

Heavy melting steel.....	\$11.50 to \$12.00
Low phos., 0.004 and under.....	15.00 to 16.00
No. 1 railroad wrought.....	12.00 to 13.00
Car wheels.....	13.00 to 14.00
Machine shop turnings.....	5.00 to 6.00
Cast iron borings.....	5.00 to 6.00
Heavy axle turnings.....	8.00 to 9.00
Grate bars.....	9.00 to 10.00
No. 1 busheling.....	9.00 to 10.00
Stove plate.....	12.00 to 13.00
Bundled sheet stampings.....	6.00 to 7.00
No. 1 machinery cast.....	14.00 to 15.00

Cincinnati

CINCINNATI, July 19.

Pig Iron.—The market was very quiet during the week. Inquiries and sales have been confined almost entirely to carload lots. The Lunkenheimer Co. has been in the market for 150 tons and it is reported that a cash register company has entered the market for 160 tons of Southern iron of special specification. The Alabama Co. put out its Etowah furnace at Gadsden July 19, leaving but one merchant furnace active in the entire South, and it may blow out at any moment. The Globe Furnace of the Globe Iron Co., Jackson, on account of a mine tippie burning down, will be blown out about Aug. 1.

Based on freight rates of \$4.50 from Birmingham and \$2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	\$24.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	25.00
Ohio silvery, 8 per cent sil.	38.02
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	23.52
Basic, Northern	22.52
Malleable	23.52

Tool Steel.—Pickup business is about the only activity. High speed steel, 18 per cent tungsten, is being quoted at \$1 per lb. base.

Finished Material.—Buying continues light, orders being for the most part small and for immediate delivery. There is still no stimulation to be observed as a result of the recent price reductions and it appears doubtful as to whether the lower prices will initiate increased activity. The 600 tons for bridges for the Kanawha & Michigan Railway Co., previously reported, went to the Mt. Vernon Bridge Co. Bids for the 450,000 tie plates aggregating about 2500 tons, recently called for by the Big Four Railroad, were opened July 18. It is understood that 100 tons of reinforcing bars will be given out shortly by the E. H. Latham Co., Columbus, general contractor, for the construction of the stadium of Ohio State University, and other tonnages will be placed as the erection proceeds. Bids will be received up to July 28 for the proposed new passenger station at Covington, Ky., to cost about \$80,000 and to be erected jointly by the C. & O. and L. & N. railroads. Specifications calling for bids on approximately 1200 tons of black sheets, issued by the Bureau of Supplies and Accounts, Navy Department, have been received by a mill in this district. The mills of the American Rolling Mill Co., Middletown, have been operating during the week and are expected to continue next week. The plant of the Newport Rolling Mill Co. is still shut down.

Warehouse Business.—Local jobbers report good volume of orders but quantities light. It is felt by some that further price reductions may stimulate more activity, others are of the opinion that general conditions are the governing factor. New prices went into effect July 12, prices being now as follows:

Iron and steel bars, 3.15c. base; hoops and bands, 3.85c. base; shapes, 3.25c. base; plates, 3.25c. base; reinforcing bars, 3.22½c. base; cold rolled rounds, 1½ in. and larger, 4.25c.; under 1½ in. and flats, squares and hexagons, 4.75c.; No. 10 blue annealed sheets, 3.85c.; No. 28 black sheets, 4.92c.; No. 28 galvanized sheets, 5.92c.; wire nails, \$3.50 per keg base; No. 9 annealed wire, \$3.10 per 100 lb.

Coke.—Inquiries for coke during the week were light, but there has been some carload business, one

inquiry for 900 tons and two for 300 tons, previously reported, are expected to be placed at end of the week. Prices remain unchanged.

Old Material.—Activity in the scrap market is at a standstill. Prices are, if anything, tending to lower levels, but in the absence of trading remain unchanged by most dealers. One dealer, however, is now quoting as follows: Bundled sheets, \$4 to \$5; cast borings, \$2 to \$3; steel turnings, \$1; iron axles, \$15 to \$16; pipes and flues, \$4 to \$5.

We quote dealers' buying prices:

Per Gross Ton	
Bundled sheets.....	\$4.00 to \$5.00
Iron rails.....	11.00 to 12.00
Relaying rails, 50 lb. and up.....	25.00 to 26.00
Rerolling steel rails.....	10.00 to 11.00
Heavy melting steel.....	8.50 to 9.50
Steel rails for melting.....	9.00 to 10.00
Car wheels.....	11.50 to 12.50
Per Net Ton	
No. 1 railroad wrought.....	8.50 to 9.50
Cast borings.....	2.00 to 3.00
Steel turnings.....	2.00 to 2.50
Railroad cast.....	11.00 to 12.00
No. 1 machinery.....	12.00 to 13.00
Burnt scrap.....	6.50 to 7.50
Iron axles.....	15.00 to 16.00
Locomotive tires (smooth inside).....	8.50 to 9.50
Pipes and flues.....	4.00 to 5.00

St. Louis

ST. LOUIS, July 18.

Pig Iron.—Three sales of Northern malleable were made this week that are considered of consequence in these days when orders are few and far between. A southern Illinois melter bought 500 tons, an eastern Kansas foundry bought 300 tons, and 100 tons went to a Belleville, Ill., stove factory. Some little carload business was done, and four or five inquiries for carloads were out.

We quote delivered consumers' yards St. Louis as follows, having added to furnace prices \$2.80 freight from Chicago and \$5.74 from Birmingham:

Northern malleable.....	\$22.80 to \$23.30
Basic.....	22.80 to 23.30
Southern foundry, sil. 1.75 to 2.25.....	25.74 to 26.24

Finished Iron and Steel.—Recent reductions so far have not had the effect of stimulating business, and such orders as are being placed are not attributed to lowering of prices. The Unit Construction Co., St. Louis, has sublet the contract for the concrete work for the University of Kansas Stadium at Lawrence to J. P. Sprague & Co., Kansas City, 200 tons of reinforcing bars being involved. Inquiries were received here from the Southern Wire & Iron Co., Dallas, Tex., for 500 tons of reinforcing bars for a job in Galveston, Tex. The Mississippi Valley Bridge & Iron Co., Leavenworth, Kan., got the order for the structural steel (1100 tons) for the motor transport division of the Army there, which St. Louis fabricators eagerly sought. The Lincoln Steel & Forge Co., St. Louis, received an order from the Missouri Pacific Railroad for 500 sets of underframes, involving 320 tons of structural steel. Inquiries from railroads were confined to less than carload lots, being material for filling in, such as car wheels, axle bars, etc. Warehouse business is dull.

For stock out of warehouse we quote: Soft steel bars, 3.02½c. per lb.; iron bars, 3.02½c.; structural shapes, 3.12½c.; tank plates, 3.12½c.; No. 10 blue annealed sheets, 3.77½c.; No. 28 black sheets, cold rolled, one pass, 5c.; No. 28 galvanized sheets, 6c.; cold drawn rounds, shafting and screw stock, 4.45c.; structural rivets, \$4.12½ per 100 lb.; boiler rivets, \$4.22½; tank rivets, 7/16 in. and smaller 60-10 per cent off list; machine bolts, large, 55 per cent; small, 60 per cent; carriage bolts, large, 50-5 per cent; small, 55 per cent; lag screws, 60 per cent; hot pressed nuts, square or hexagon, blank, \$3.25; and tapped, \$3.00 off list.

Coke.—Very little business is being done in coke, and that little is being handled by the local and Granite City by-products plants. Standard Connellsville beehive foundry is quoted at \$5 ovens, or \$10.04 delivered St. Louis, Granite City by-products meeting this price, while Laclede by-product foundry is quoted at \$11.50 ovens, or \$11.70 delivered in the St. Louis industrial district.

Old Material.—Trading in old materials has been very light, even transactions between dealers being almost entirely suspended. There were no railroad

lists before the market this week. The trend of prices is still lower, although the nominal prices of last week remain unchanged, except No. 1 railroad heavy melting steel, which is \$1 lower at \$10 to \$10.50.

We quote dealers' prices, f.o.b. consumer's works, St. Louis industrial district and dealers' yards as follows:

Per Gross Ton	
Iron rails	\$12.50 to \$13.00
Steel rails, rerolling	12.00 to 12.50
Steel rails, less than 3 ft.	11.50 to 12.00
Relaying rails, standard section, subject to inspection	27.00 to 29.00
Cast-iron car wheels	12.00 to 12.50
No. 1 railroad heavy melting steel	10.00 to 10.50
No. 1 heavy shoveling steel	9.50 to 10.00
Ordinary shoveling steel	9.00 to 9.50
Frogs, switches and guards, cut apart	11.00 to 11.50
Ordinary bundled sheet	4.00 to 4.50
Per Net Ton	
Heavy axle and tire turnings	5.00 to 5.50
Iron angle bars	10.50 to 11.00
Steel angle bars	9.00 to 9.50
Iron car axles	17.50 to 18.00
Steel car axles	12.00 to 12.50
Wrought iron arch bars and transoms	12.50 to 13.00
No. 1 railroad wrought	9.00 to 9.50
No. 2 railroad wrought	8.50 to 9.00
Railroad springs	10.00 to 10.50
Steel couplers and knuckles	10.00 to 10.50
Locomotive tires, 42 in. and over, smooth inside	8.00 to 9.00
No. 1 dealers' forge	6.50 to 7.00
Cast iron borings	6.00 to 6.50
No. 1 busheling	9.00 to 9.50
No. 1 boilers cut in sheets and rings	6.00 to 6.50
No. 1 railroad cast	11.50 to 12.00
Stove plate and light cast	10.50 to 11.00
Railroad malleable	9.00 to 9.50
Agricultural malleable	9.00 to 9.50
Pipes and flues	6.50 to 7.00
Heavy railroad sheet and tank	6.00 to 6.50
Light railroad sheet	3.50 to 4.00
Railroad grate bars	7.00 to 7.50
Machine shop turnings	4.00 to 4.50
Country mixed iron	6.50 to 7.00
Uncut railroad mixed	8.00 to 8.50
Horseshoes	10.00 to 10.50
Railroad brake shoes	7.50 to 8.00

Birmingham

BIRMINGHAM, ALA., July 19.

Pig Iron.—By the end of last week the Birmingham iron market was on a \$20 base. Car loads were selling at \$20.50, but \$20 was the admitted schedule for any real buying. Some disturbance of the \$20 base was caused by the appearance in the market of some resale iron, how much is not known, but it was encountered in more than one direction. This iron was offered at \$19.50. That seems to be the lowest that is reported anywhere. Melters and makers appear to be nearer a common agreement that prices of iron are lower than they have yet been and there is less disposition on the part of the melter to hammer the market. Only one foundry stack is in blast in Alabama, the Woodward Iron Co. having blown out its Gadsden stack to-day. There will be another reduction of merchant iron stocks this month. Strategically Alabama iron is stronger than in some time. The going business is in small lots, with the sanitary pipe shops coming in regularly for immediate requirements, while one sanitary pipe interest recently ordered 2000 tons to cover requirements of several months. Southern iron makers are insistent in their demand for lower rail rates to competitive points, asking for a compromise between the pre-war rates and those now in existence. For instance, they ask an \$8 rate to the East compared with a pre-war rate of \$6 and the present rate of \$10.26. Other requests are on the same base. The Southern iron melt is increasing owing to greater activity at stove plants and other foundries. The total volume of business last week was not great, but indications of an increasingly steady buying movement are much better.

We quote per gross ton f.o.b. Birmingham district furnace, as follows:

Foundry, sil. 1.75 to 2.25	\$20.00
Basic	19.00
Charcoal	35.00

Cast Iron Pipe.—Anniston shops of the United States Cast Iron Pipe & Foundry Co. have resumed after being down two weeks for repairs. The National Cast Iron Pipe Co. received an order for 140 tons from Minneapolis, but no large bookings were made. There is a fairly active inquiry for pipe for industrial purposes. The sanitary shop of the Emory Pipe Co. at

Anniston resumed during the week and promises full operations. Sanitary pipe is at about 50 per cent of productive capacity. The base is \$40. The real base of high pressure pipe is about \$40.

Finishing Mills.—The Gulf States Steel Co. has notified its workers of a reduction of bonus from 25 to 15 per cent. It is operating at less than 30 per cent in finishing mills and idle in other departments. The Tennessee company is operating the plate mill and rail mill and car plants. The car plant has turned out its first car, doing so exactly one month after the plant started. It was a 100,000-lb. capacity steel low-side gondola for the Louisville & Nashville, which has ordered 600 cars.

Coal and Coke.—The Cotton Belt route has placed its Texas coal tonnage of 12,000 a month with Walker County mines. Domestic coal has begun appearing in Birmingham at \$5 from nearby mines, hauled in trucks over hard roads. Standard foundry coke has receded 50c. and sells at \$6 to \$6.50. Semet-Solvay Co., at Ensley, has reduced operations since the Alabama Co. blew out at Gadsden and quit taking coke. The National Cast Iron Pipe Co. was the successful bidder on 1000 tons of water pipe for Akron, Ohio, Friday. This plant is at near capacity of operations.

Old Material.—Scrap was never duller and prices are nominal.

We quote per gross ton f.o.b. Birmingham district yard as follows:

Steel rails	\$10.00 to \$11.00
No. 1 steel	9.00 to 10.00
No. 1 cast	15.00 to 16.00
Car wheels	15.00 to 16.00
Tramcar wheels	12.00 to 13.00
No. 1 wrought	13.00 to 14.00
Stove plate	9.00 to 10.00
Cast iron borings	6.00 to 7.00
Machine shop turnings	6.00 to 7.00

Philadelphia

PHILADELPHIA, July 19.

A few occurrences within the past week lend interest to an otherwise dull iron and steel market. One of the most important in its effect on steel prices was the purchase of 5000 tons of plates and shapes by the Belmont Iron Works from an Eastern steel company at prices reported to be 1.75c. for the plates and 1.80c. for the shapes, Pittsburgh. In addition the Belmont Works bought 1000 tons of surplus shipyard structural steel, 1500 tons of black corrugated sheets and a small tonnage of bolts and nuts. On all items there was keen competition for the business, with marked sacrifices in prices. The sheets are reported to have been placed at a price close to 3c., base, Pittsburgh, with usual extras. Although makers of bolts and nuts had reduced prices only last week, the competition for about 50 tons of bolts and nuts brought out still lower figures.

A better inquiry for pig iron also caused a scramble for business at the expense of prices. Not since the decline in pig iron started in October, 1920, have prices dropped so precipitously as within the past 10 days. Eastern furnaces, which only recently were holding for \$24, base, for shipment into this district are now quite willing to sell at \$20 to \$20.50, a drop of \$3.50 to \$4. The encroaching competition of Buffalo furnaces is partly responsible for the decline, but the determination of some pig iron companies to reduce their inventory, even at a considerable loss, is also a factor.

There was also a flurry in steel scrap when news leaked out that an Eastern steel company had bought a tonnage at \$12, delivered, which was \$1 higher than was generally obtainable last week.

There are indications from several directions that consumers are beginning to take more interest in the market, but such indications are not yet well enough defined to become the basis for any optimistic predictions as to early recovery in business. However, it is significant that the sales departments of steel and pig iron companies are more hopeful than they have been at any time in months.

Pig Iron.—For some weeks the makers of foundry pig iron in eastern Pennsylvania have been actively competing with Buffalo furnaces for business in New

England and in the New York territory, and on such inquiries they have made quotations considerably lower than they were willing to make for delivery at Philadelphia or vicinity. Within the past week, however, the Buffalo furnaces have encroached further into this territory. An inquiry for about 200 tons from a Flemington, N. J., foundry, for example, brought out such low prices that the market again was wide open, and the Eastern furnaces abandoned the efforts that had been made to hold No. 2 plain iron at \$24, furnace, for shipment within this immediate district. Quotations as low as \$20 to \$20.50, furnace, for No. 2 plain and \$21 to \$21.50, furnace, for No. 2X have been made within the past few days. Carload lots do not command quite such low prices as larger tonnages, one selling office having sold No. 2X iron on the same day at prices ranging from \$21 to \$23, furnace, depending on the tonnage and the competition to be met. Basic iron has declined with foundry grades. A sale of 1000 tons of basic was made to a Harrisburg consumer at a price reported to be about \$20, furnace. Whether this was the actual selling price or not, basic iron is to-day available at \$20, furnace, and on a large tonnage for immediate shipment, even lower might be done. There has been better inquiry and more active buying of iron within the past week. Sales have totaled several thousand tons. One office within the week sold 3500 tons, which exceeded in quantity the business booked in the whole month preceding. Among the individual sales worthy of note was one of 1000 tons of No. 2 plain iron and another of 300 tons of the same grade; in addition to which was the 1000-ton lot of basic mentioned above. There was keen competition among Eastern furnaces for two New England orders, one of which, that of the Crane Co., Bridgeport, Conn., for 500 tons was placed with a Buffalo furnace at a price reported to be about \$22.60, delivered, for No. 2 plain. This iron will be moved by canal from Buffalo. The decline in eastern Pennsylvania foundry iron prices for the week is about \$3.50 to \$4, the largest on record within any similar period since prices started downward in October, 1920.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia, and include freight rates varying from 84 cents to \$1.54 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$20.85 to \$21.25
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.85 to 22.75
Virginia No. 2 plain, 1.75 to 2.25 sil.	29.74 to 31.74
Virginia No. 2X, 2.25 to 2.75 sil.	30.74 to 32.99
Basic deliv. eastern Pa.	21.25 to 22.00
Gray forge	22.00 to 23.00
Malleable	22.00 to 23.00
Standard low phos. (f.o.b. furnace)	38.00
Copper bearing low phos. (f.o.b. furnace)	35.00

Ferroalloys.—The market is dull, with no inquiry of consequence to test prices. Domestic ferromanganese is available at \$70, delivered, while British alloy can be made at \$70, seaboard, or possibly lower. Spiegeleisen is available at \$26, furnace.

Semi-Finished Steel.—The N. & G. Taylor Co., Cumberland, Md., bought 1500 tons of sheet bars from an Eastern steel company at a price reported to be at least \$1 or \$2 a ton below the \$35 quotation recently established. There is little or no demand for billets, which are unchanged in price at \$33, Pittsburgh, for rerolling quality and \$38 for forging quality.

Plates.—Though there is little business, the plate market has shown further evidence of weakness, particularly in the competition for the order of the Belmont Iron Works, consisting partly of plates. These plates are reported to have been taken at 1.75c., Pittsburgh, but on ordinary quantities, such as are now being quoted upon, the usual quotations are 1.80c. to 1.90c., Pittsburgh. At least one mill is willing to take business, even in carloads, at the former figure, while some other mills quote 1.85c. or 1.90c. The Lehigh Valley Railroad is asking for bids on repairs to 4000 miscellaneous freight cars.

Structural Material.—Of the 5000 tons of plates, shapes and bars placed by the Belmont Iron Works with a leading independent mill, a large part was structural shapes, on which a price of 1.80c. is reported to have been made. On small lots, buyers would now have no difficulty in obtaining quotations of 1.85c. The Belmont purchase included 1000 tons of surplus ship-

yard material, on which a price somewhat lower was made. The latter order went to a local steel broker. All of this steel was bought for the fabrication of airplane hangars for the Government, on which the Belmont Works was low bidder.

Sheets.—The Belmont Iron Works bought 1500 tons of black corrugated sheets last week at a price reported to be close to 3c., base, Pittsburgh, with usual extras. Prices on sheets are being generally shaded. Blue annealed have been quoted at 2.50c., black at 3.25c. and galvanized at 4.25c., Pittsburgh, these prices being \$3 a ton on blue annealed and \$5 a ton on black and galvanized below the so-called "official" prices named by some companies just recently.

Bars.—Some shading of the 1.90c. bar price is reported, and the fact that the price is holding as well as it is said to be is due largely to the fact that there have been few inquiries attractive enough to induce the mills to cut. Makers of bar iron have taken off \$1 more from their price, the quotation now being 1.75c., base, Pittsburgh.

Wire Products.—A substantial improvement in purchases of wire products, particularly nails, by jobbers has been noted within the past week. This enlarged buying by jobbers also applies to some other steel products. Prices of wire products appear to be holding more firmly than are prices on other steel products. We quote plain wire at 2.50c. and wire nails at 2.75c. per lb., base, Pittsburgh.

Warehouse Business.—No price changes have occurred within the past week. We quote for Philadelphia delivery as follows:

Soft steel bars and small shapes, 2.90c.; iron bars (except bands), 2.90c.; round edge iron, 3.20c.; round edge steel, iron finish, 1½ in. x ½ in., 3.20c.; round edge steel, planished, 3.95c.; tank steel plates, ¼-in. and heavier, 3c.; tank steel plates, 3/16-in., 3.20c.; blue annealed steel sheets, No. 10 gage, 3.65c.; light black steel sheets, No. 28 gage, 4.50c.; galvanized sheets, No. 28 gage, 5.50c.; square twisted and deformed steel bars, 2.90c.; structural shapes, 3c.; diamond pattern plates, ¼-in., 4.75c.; 3/16-in., 4.95c.; ½-in., 5.05c.; spring steel, 4.40c.; round cold-rolled steel, 4.50c.; squares and hexagons, cold-rolled steel, 5c.; steel hoops, No. 13 gage and lighter, 3.85c.; steel bands, No. 12 gage to 3/16-in. inclusive, 3.60c.; iron bands, 4.20c.; rails, 3.20c.; tool steel, 12c.; Norway iron, 6.50c.; toe steel, 4.50c.

Old Material.—Purchase by the Bethlehem Steel Co. of a tonnage of steel scrap at \$12, delivered Bethlehem, was the only activity of note in the scrap market during the week. This price was \$1 per ton higher than was generally obtainable from Eastern mills a week ago. Dealers have offered \$11 to \$11.25 in covering on this contract. A 500-ton sale of No. 1 cast scrap was made at \$17, delivered. Pipe is slightly higher. We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	\$11.00 to \$12.00
Scrap rail	10.00 to 10.50
Steel rails, rerolling	14.00 to 15.00
No. 1 low phos., heavy 0.04 and under	17.00 to 18.00
Car wheels	16.00 to 17.00
No. 1 railroad wrought	13.50 to 14.50
No. 1 yard wrought	12.50 to 13.00
No. 1 forge fire	10.00 to 10.50
Bundled sheets (for steel works)	8.00 to 8.50
No. 1 busheling	11.50 to 12.00
No. 2 busheling	10.00 to 11.00
Turnings (short shoveling grade for blast furnace use)	7.50 to 8.00
Mixed borings and turnings (for blast furnace use)	7.00 to 7.50
Machine-shop turnings (for rolling mill and steel works use)	7.50 to 8.00
Heavy axle turnings (or equivalent)	8.50 to 9.00
Cast borings (for rolling mills)	8.50 to 9.00
Cast borings (for chemical plants)	No market
No. 1 cast	17.00 to 17.50
Railroad grate bars	12.50 to 13.00
Stove plate (for steel plant use)	12.00 to 12.50
Railroad malleable	15.50 to 16.50
Wrought iron and soft steel pipes and tubes (new specifications)	12.00 to 12.50
Iron car axles	No market
Steel car axles	No market

The Muskegon Piston Ring Co., Muskegon, Mich., has been organized by George W. Olson, Joseph A. Kitzinger of Muskegon, and John R. Nix of Muskegon Heights, Mich., to manufacture piston rings of iron and steel.

The plant of the Elliott-Fisher Co., manufacturer of bookkeeping and accounting machines, located at Harrisburg, Pa., has been closed for several weeks because of the general dullness of trade.

Cleveland

CLEVELAND, July 18.

Iron Ore.—The Ford Motor Co., which recently sent out an inquiry for ore to a number of producers, has finally placed 135,000 tons with a Cleveland ore firm. This is the only sale reported during the week and no new inquiries have come out. Owing to the absence of orders, shippers are unable to keep in operation all the boats that have been running and several lake freighters were laid up during the week. A cargo of Swedish ore offered for sale at 8c., as reported in THE IRON AGE several weeks ago, is now reported sold at 7½c., sea-board.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, \$6.45; Old range non-Bessemer, 51½ per cent iron, \$5.70; Mesabi Bessemer, 55 per cent iron, \$6.20; Mesabi non-Bessemer, 51½ per cent iron, \$5.55.

Pig Iron.—The market which showed a little spurt for a few days lapsed back into the usual dullness during the week. Sales were limited to a few small lots of foundry iron. One lake furnace interest sold 900 tons in lots of 200 tons and under. One broker booked only 100 tons. The only inquiry of any size that came out was from the Studebaker Corporation for 500 to 1,000 tons of foundry iron. This inquiry, however, indicates an uncertainty whether the order will be placed. One inquiry for 100 tons of silvery iron is pending, on which the schedule price has been quoted. The market has virtually settled down to a \$20 price for No. 2 foundry iron, but one lake furnace made a few carlot sales during the week at \$20.50. For basic iron, \$19 is generally considered the market price, although there have been no recent sales in this territory to establish a price for this grade. A western Pennsylvania consumer, on an inquiry for 300 tons of basic iron, reports that he was quoted a price of \$19.75 delivered, which figured back to a Valley basis, would mean a \$17.79 Valley furnace price. Furnaces have received a few releases of shipping orders from automobile foundries this month, but as a whole July shipments will show a falling off as compared with June. Some of the malleable foundries that cater to railroad work are getting a better volume of business from that source, but this has not brought out any demand for malleable iron.

We quote delivered Cleveland as follows, based on the new freight rate, there being a 56c. switching charge for local iron, a \$1.96 freight rate from Valley points, a \$3.36 rate from Jackson and \$6.67 from Birmingham:

Basic	\$20.96 to \$21.46
Northern No. 2 fdy., sil. 1.75 to 2.25.	20.50 to 21.00
Southern fdy., sil. 2.25 to 2.75.	23.92
Ohio silvery, sil. 8 per cent.	38.86
Standard low phos., Valley furnace.	36.00 to 37.00

Finished Iron and Steel.—The demand for finished iron and steel has improved somewhat during the past few days, but the market is weak and unsettled. The recently established prices are not being maintained. On small lots of steel bars, plates and structural material, sales are being made at regular prices, but desirable inquiries are bringing out concessions the amount of which depends on the size of the order. An Ohio fabricating shop is inquiring for 2500 tons of plates, bars and structural material, which has brought out some extremely low quotations and reports indicate that this business is likely to be placed around 1.75c. The improved activity is more pronounced in plates, for which there is a better demand from boiler and tank shops, but plate prices are weaker than bars and structural material, 1.90c. being quite commonly quoted for plates. However, low prices are being named on soft steel reinforcing bars for work on which either soft or hard steel bars can be used. On one inquiry of that character for 100 tons, a quotation on soft steel bars of 1.70c. or lower is reported as compared with 1.75c. for hard steel bars. Encouraging reports are coming from the automobile field. Michigan automobile plants are reported to be operating at an average of 70 to 75 per cent of capacity and expect to be able to keep going at their present schedules through August. There is improvement in inquiry for small lots of steel from automobile makers. A Detroit car builder is inquiring for 120 tons of chrome vanadium and 175 of open-hearth spring steel. Structural work is dragging. Owing evidently to the

declining steel prices, much of the pending work is being refigured and some has been held up until fall. The 2300 tons for the Ohio State University stadium, Columbus, is expected to be placed Wednesday. The only award reported is 300 tons for the Harter Bank, Canton, to the Canton Bridge Co. School work in northern Ohio now pending aggregates about 2000 tons in lots of 200 and under. Railroad inquiry also shows improvement. The New York Central Lines are in the market for a large lot of track bolts, angle bars and tie plates and the Wheeling & Lake Erie Railroad is inquiring for 10,000 angle bars.

Jobbers quote steel bars 2.79c.; plates and structural shapes, 2.89c.; No. 9 galvanized wire, 3.50c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 4.25c.; No. 28 galvanized sheets, 5.25c.; No. 10 blue annealed sheets, 3.40c. to 3.55c.; hoops and bands, 3.44c.; cold rolled rounds, 4c.; flats, squares and hexagons, 4.50c.

Sheets.—Weakness has again developed in the sheet market following the recent price reductions. Concessions of \$2 to \$5 a ton are being made. On galvanized sheets 4.25c. is being quoted, a concession of \$5 a ton, and on blue annealed sheets quotations of 2.40c. to 2.50c. have appeared. Black sheets are firmer than other grades, the largest concession reported on these being \$2 a ton to 3.40c. A western Pennsylvania tank shop is inquiring for 300 tons of heavy sheets for mine castings for the Navy Department.

Coke.—Although The Wickwire-Spencer Steel Corporation, Buffalo, has inquired for 30,000 tons of furnace coke, it is reported that this interest will probably buy some pig iron instead of starting up a blast furnace and consequently will not purchase the coke. Foundry coke is very quiet with quotations ranging from \$4 to \$4.50 for Connellsville brands although a few producers are still asking \$5 and carlot sales are reported at the higher price.

Bolts, Nuts and Rivets.—The demand for bolts and nuts has improved. Some large orders were placed during the week by the Ford Motor Co., which recently sent out an inquiry for 8,000,000 bolts and nuts. Some carload orders were placed by railroads and jobbers and inquiries for several million bolts have come from jobbing houses. These are taken to indicate that jobbers think that prices may not go lower and they will stock up. Some releases on suspended shipments have also come out. Prices are being well maintained. Rivets are very dull and irregular. There are large quantities of resale rivets, formerly owned by the Emergency Fleet Corporation, on the market and it is claimed that some of the recent low quotations have been on these resale rivets. Carlot prices are 2.75c. for structural and 2.85c. for boiler rivets, but these can probably be shaded.

Old Material.—The market continues almost at a standstill. There was a little trading during the week between dealers who have small unfilled orders for compressed steel and machine shop turnings for Weirton and other consuming points, but no consumers are in the market. Some of the dealers are trying to get mills interested in buying scrap and laying it down at the present low prices, but without success. Prices are unchanged.

We quote per gross ton delivered consumers' yards in Cleveland and vicinity as follows:

Heavy melting steel	\$10.50 to \$11.00
Steel rails, under 3 ft.	11.50 to 12.00
Steel rails, rerolling	13.00 to 14.00
Iron rails	11.00 to 12.00
Iron car axles	18.00 to 19.00
Low phosphorus melting scrap	12.50 to 13.00
Cast borings (nominal)	7.00 to 7.50
Machine shop turnings	4.50 to 4.75
Mixed borings and short turnings	6.50 to 7.00
Compressed steel	6.00 to 6.50
Railroad wrought	10.00 to 10.50
Railroad malleable	11.00 to 12.00
Light bundled sheet stampings	3.50 to 4.00
Steel axle turnings	8.00 to 8.50
No. 1 cast	16.00 to 16.50
No. 1 busheling	7.50 to 8.00
Drop forge flashings, over 10 in.	5.50 to 6.00
Drop forge flashings, under 10 in.	6.00 to 6.50
Railroad grate bars	12.75 to 13.00
Stove plate	12.75 to 13.00
Pipes and flues	8.00 to 7.00

San Francisco

SAN FRANCISCO, July 14.

Pig Iron.—A single sale of 100 tons of Belgian iron is practically the only evidence of activity in the Coast market at this time. The price paid for this lot, which was No. 1 grade, was \$30, ex-ship, San Francisco. Recent developments indicate a decided softening tendency in pig iron; this week one interest received an offer of a large quantity of Belgian iron on the basis of about \$26, c.i.f. San Francisco. Of course, much of the iron was not highest grade, but some of it contained 3 per cent silicon. Foundry operations continue very greatly restricted and the general situation is dull. There is nothing to report on coke, with the exception of the narrow routine demand, and the arrival of occasional carlot quantities.

Old Material.—A local interest recently purchased 100 tons of heavy melting steel at \$9 gross ton, delivered. Still greater weakness is indicated by recent sales, in small lots, of cast iron scrap, which have been reported around \$20, with one instance of a considerably lower price. The market generally is unsettled and dull.

Cast Iron Pipe.—Interest in this market has narrowed somewhat during the past week, as indicated by the volume of offerings. Redwood City, Cal., asked bids for 63 tons of 4-in. pipe, and Yuba City is in the market for 48 tons of 8-in., 32 tons of 6-in. and 9 tons of 4-in. pipe. Inquiries from private sources are similarly light. The market remains steady.

Finished Iron and Steel.—Depression still prevails in building construction in San Francisco, although there are indications that point to alleviation of the situation; there is a determined stand for the open shop, which, however, the Building Trades Council is opposing vigorously. A few days ago, an attempt to re-open the planing mills failed in 19 out of 22 cases, and the three had been running with an irregular crew. Since the recent price cuts by the Steel Corporation, the steel market on the Coast has been quiescent, the tendency apparently being to wait for developments. It is understood that there is some independent cutting on plates and shapes. The export market appears slightly more encouraging, with some little demand for sheets and rails from the Orient.

British Iron and Steel Market

Full Prices Still Prohibitive—Pig Iron Higher
—Bars and Tin Plate Lower
(By Cable)

LONDON, ENGLAND, July 19.

Blast furnaces are very slow in re-lighting, only four now working in Cleveland. Fuel costs are still prohibitive, and furnace owners will not resume operations until these costs are greatly reduced.

There is plenty of general inquiry for steel, but the bulk of the business goes to the Continent. German billets are being sold at £5 15s. (\$20.59) f.o.b.; French sheet bars at £7 (\$25.06) c.i.f.; German merchant steel bars at £10 10s. (\$37.59) to £11 (\$39.38) c.i.f. For Japan, ¼-in. plates are quoted at £8 (\$28.64) f.o.b.; 8-gage wire at £15 (\$53.70) c.i.f. Japan. German works are getting well booked ahead. Jessops of Sheffield has been closed down indefinitely, and customers have been requested to place their orders elsewhere.

In tin plate the tendency of prices is downward. More mills are being started, but there is very little export inquiry, and the increase in the French duty is a further obstacle to business. Galvanized sheets are easy, the expected demand having failed to materialize.

We quote per gross ton except where otherwise stated, f.o.b. maker's works, with American equivalent figured at \$3.58 per £1 as follows:

Durham coke	£2 2	\$7.52
Cleveland basic	6 0	21.48
Cleveland No. 1 foundry	7 0	25.06
Cleveland No. 3 foundry	6 15 & £7 0*	24.17 & \$25.06
Cleveland No. 4 foundry	6 15 & 7 0*	24.17 & 25.06
Cleveland No. 4 forge	5 17½	21.03
Hematite	7 0*	25.06
East Coast mixed	8 0 & 7 5*	28.64 & 25.96
Ferromanganese	18 0 & 15 0*	64.44 & 53.70
Ship plates	14 10	51.91
Boiler plates	19 0 to 21 0	68.02 to 75.18
Tees	14 10	51.91
Channels	13 15	49.23
Beams	13 10	48.33
Round bars, ¼ to 3 in.	12 10	44.75
Rails, 60 lb. and up.	10 0 to 15 0	35.80 to 53.70
Billets	11 0 to 11 10	39.38 to 41.17
Sheet and tin plate bars, Welsh	10 10	37.59
Galvanized sheets, 24 g.	22 10 to 23 10	80.55 to 84.13
Black sheets	19 0 to 20 0	68.02 to 71.60
Tin plate base box	1 4 to 1 7½	4.30 to 4.92
Steel hoops	17 0	60.86

*Export price.

Welfare Work for Employees

Analysis has been made by the International Labor Office, Washington, of the extent to which American manufacturing and other industries have carried on various classes of welfare work for their employees. The preliminary report covers 159 plants having a total of 453,069 employees, or an average of nearly 3000 each. Of the entire list, 51, or about one-third, are comprised under the headings of metal products, machinery, tools, electrical equipment, etc., automobiles and mining, and hence come fairly under the field served by THE IRON AGE. These 51 plants have a total of 191,024 employees, or more than 40 per cent of those covered by the survey.

Among the 51 plants, 27 employing 158,406 people are engaged in supplying their employees with certain educational facilities. It is reported that more than 30,000 of the employees, or 19 per cent of the number affected, are receiving direct benefit from this work. Some of the establishments give general educational training, some vocational training, some give lectures on safety and other matters and some maintain libraries for the use of their employees.

Of the 51 plants in our field, 38 provide sick or death benefits, 8 make provision for helping employees during slack seasons or periods of unemployment, and 14 provide old age pensions under varying sets of conditions. Some of the plants, of course, take care of all three of these forms of benefits.

Thirty of the establishments in THE IRON AGE field, with a total of 156,929 employees, provide recreational facilities, of which it is reported that more than 45,000, or 29 per cent, of the employees take advantage. Seventeen of these plants maintain separate club houses; 10 others maintain club rooms. There are 30 baseball diamonds, 51 tennis courts distributed among 16 plants, 22 bowling alleys maintained by 7 establishments. Nineteen of the plants have billiard or pool rooms with a total of 173 tables, of which number 100 are maintained by 2 automobile factories. Seven golf courses, 4 swimming pools, 10 gymnasiums, 19 orchestras, 18 bands and 10 glee clubs are maintained by as many establishments, while 26 of the plants have provision for regular outings or picnics.

The Osborn Mfg. Co., Cleveland, recently placed its new foundry at Grafton, Ohio, in operation and all molds for castings for its molding machines, except for the special, large size machines, are being made on a roll-over type of Osborn machine. The management states that operations in this plant indicate that the use of molding machines shows a saving in labor in a jobbing shop that is not engaged in production work. One of the molds for a molding machine housing made in the Osborn shop requires a flask 8 ft. long, 7 ft. wide and the cope and drag are each 36 in. deep. The weight of a cope half after the pattern was rammed was 20,500 lb. The mold was made on the largest size Osborn roll-over jolt molding machine.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia	\$0.35	St. Paul	\$0.665
Baltimore	0.335	Omaha	0.815
New York	0.38	Omaha (pipe)	0.77
Boston	0.415	Denver	1.35
Buffalo	0.295	Denver (wire products)	1.415
Cleveland	0.24	Pacific Coast	1.665
Cincinnati	0.325	Pacific Coast, ship plates	1.335
Indianapolis	0.345	Birmingham	0.765
Chicago	0.38	Jacksonville, all rail	0.555
St. Louis	0.475	Jacksonville, rail and water	0.46
Kansas City	0.815	New Orleans	0.515
Kansas City (pipe)	0.77		

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 55c.; ship plates, 75c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes, common wire hoops, 75c.; sheets and tin plates, 60c. to 75c.; rods, wire rope, cable and strands, \$1; wire fencing, netting and stretcher, 75c.; pipe, not over 8 in. in diameter, 75c.; over 8 in. in diameter, 2 1/2c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, 1/4 in. thick and over, and zeeks, structural sizes, 2c.

Wire Products

Wire nails, \$2.75 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.25 and shorter than 1 in., \$1.75; bright Bessemer and basic wire, \$2.50 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$2.50; galvanized wire, \$3; galvanized barbed wire, \$3.40; galvanized fence staples, \$3.40; painted barbed wire, \$2.90; polished fence staples, \$2.90; cement-coated nails, per count keg, \$2.35; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 68 to 70 1/2 per cent off list for carload lots, 67 to 69 1/2 per cent for 1000-rod lots, and 66 to 68 1/2 per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....\$2.65
Large boiler rivets.....\$2.75
Small rivets.....65, 10 and 10 per cent off list
Small machine bolts, rolled threads, 70 and 7 1/2 per cent off list
Small sizes in cut threads.....65 and 10 per cent off list
Longer and larger sizes of machine bolts, 65 and 10 per cent off list

Carriage bolts, 3/4 in. x 6 in.:
Smaller and shorter, rolled threads, 65 and 10 per cent off list
Cut threads.....60 and 10 per cent off list
Longer and larger sizes.....60 and 10 per cent off list
Lag bolts.....70 per cent off list
Flow bolts, Nos. 1, 2 and 3 head.....60 and 5 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, 3/4 in. x 4 in.:
Smaller and shorter.....60 and 5 per cent off list
Longer and larger sizes.....60 per cent off list
Hot pressed sq. or hex. blank nuts.....\$4.60 off list
Hot pressed nuts, tapped.....\$4.25 off list
C.p.c. and t. sq. or hex. nuts, blank.....\$4.60 off list
C.p.c. and t. sq. or hex. nuts, tapped.....\$4.25 off list
Semi-finished hex. nuts:
1/2 to 9/16 in. inclusive U. S. S., 80, 10 and 10 per cent off list
Same sizes S. A. E.....80, 10, 10 and 10 per cent off list
3/8 to 1 in. inclusive U. S. S. and S. A. E., 70, 10, 10 and 10 per cent off list
Stove bolts in packages.....80 and 10 per cent off list
Stove bolts in bulk.....80, 10 and 2 1/2 per cent off list
Tire bolts.....65, 10 and 10 per cent off list
Track bolts.....4c. base

Square and Hex. Head Cap Screws

1/2 in. and under.....70 per cent off list
9/16 in. to 3/4 in.....70 per cent off list

Set Screws

1/2 in. and under.....70 and 5 to 70 and 10 per cent off list
9/16 in. to 3/4 in.....70 per cent off list

Rivets

Rivets, 1c. per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs, 25c. extra to buyers not under contract; small and miscellaneous lots less than two tons, 25c. extra; less than 100 lb. of a size or broken kegs, 50c. extra.

All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$42; chain rods, \$42; screw stock rods, \$47; rivet and bolt rods and other rods of that character, \$42; high carbon rods, \$50 to \$54, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, \$3 base per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, 1/2-in., 3/4-in., and 7/16-in., \$3 base; 5/16-in., \$3 base. Boat and barge spikes, \$3.20 base per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Track bolts, \$4 base per 100 lb. Tie plates, \$2.50 per 100 lb.; angle bars, \$2.75 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., \$11.30 per package; 8-lb. coating, 1 C., \$11.60; 15-lb. coating, 1 C., \$14.30; 20-lb. coating, 1 C., \$15.55; 25-lb. coating, 1 C., \$16.80; 30-lb. coating, 1 C., \$17.80; 35-lb. coating, 1 C., \$18.80; 40-lb. coating, 1 C., \$19.80 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars, 1.90c. from mill. Refined bar iron, 2.50c.

Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/2	50 1/2	24	1/4 to 3/8	1 1/2	27 1/2
3/4	53 1/2	27	3/8	31 1/2	13 1/2
1	58 1/2	44	1/2	37 1/2	22 1/2
1 1/4	62 1/2	50	1 to 1 1/2	39 1/2	24 1/2
1 to 3	64 1/2	52			
2	56 1/2	44	Lap Weld		
2 1/2 to 6	60 1/2	48	2	34 1/2	20 1/2
7 to 12	57 1/2	44	2 1/2 to 6	37 1/2	24 1/2
			7 to 12	35 1/2	22 1/2
Butt Weld, extra strong, plain ends			Lap Weld, extra strong, plain ends		
1/2	46 1/2	29	1/4 to 3/8	9 1/2	42 1/2
3/4	49 1/2	32	3/8	30 1/2	18 1/2
1	55 1/2	44	1/2	37 1/2	23 1/2
1 1/4	60 1/2	49	1 to 1 1/2	39 1/2	25 1/2
1 to 1 1/2	62 1/2	51			
2 to 3	63 1/2	52			
Lap Weld, extra strong, plain ends			Lap Weld, extra strong, plain ends		
2	54 1/2	43	2	35 1/2	22 1/2
2 1/2 to 4	58 1/2	47	2 1/2 to 4	38 1/2	26 1/2
4 1/2 to 6	57 1/2	46	4 1/2 to 6	37 1/2	25 1/2
7 to 8	53 1/2	40	7 to 8	30 1/2	18 1/2
9 to 12	48 1/2	35	9 to 12	25 1/2	13 1/2

To the large jobbing trade the above discounts are increased by one point, with extra discounts of 5 and 2 1/2 per cent.

Boiler Tubes

The following are the discounts for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		Charcoal Iron	
1 1/2 in.	21 1/2	1 1/2 in.	List
2 to 2 1/2 in.	36	1 1/2 to 1 3/4 in.	10
2 1/2 to 3 in.	47	2 to 2 1/4 in.	20
3 1/4 to 13 in.	52	2 1/4 to 3 in.	25
		3 1/4 to 4 1/2 in.	27

Standard Commercial Seamless Boiler Tubes

New discounts have been adopted on standard commercial seamless boiler tubes, but manufacturers are not yet ready to announce them for publication, and for that reason we publish no discounts this week.

Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

Blue Annealed		Box Annealed, One Pass Cold Rolled	
Cents per Lb.		Cents per Lb.	
No. 8 and heavier..2.40-2.55		No. 28 (base).....3.25-3.50	
No. 9 and 10 (base).....2.50-2.65		No. 29.....3.35-3.60	
		No. 30.....3.45-3.70	
Galvanized		Tin-Mill Black Plate	
Cents per Lb.		Cents per Lb.	
Nos. 10 and 11.....3.25-3.50		No. 28 (base).....3.25-3.50	
Nos. 12 to 14.....3.35-3.60		No. 29.....3.30-3.55	
Nos. 15 and 16.....3.50-3.75		No. 30.....3.30-3.55	
Nos. 17 to 21.....3.65-3.90		Nos. 30 1/2 and 31.....3.35-3.65	
Nos. 22 to 24.....3.80-4.05			

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin	Lead		Zinc	
	Lake	Electro-lytic	New York	New York	St. Louis	New York	St. Louis
July 13	12.75	12.62½	28.25	4.40	4.35	4.75	4.25
14	12.75	12.62½	28.00	4.40	4.35	4.75	4.25
15	12.75	12.62½	27.75	4.40	4.35	4.75	4.25
16	12.75	12.62½	27.75	4.40	4.35	4.75	4.25
18	12.75	12.62½	27.25	4.40	4.35	4.75	4.25
19	12.75	12.62½	27.00	4.40	4.35	4.75	4.25

New York

NEW YORK, July 19.

The markets are exceedingly dull. Copper is quiet and there is some weakness in prices in the outside market. Tin is lower in price because of the British exchange and larger offerings both here and at London. Lead is quiet with prices unchanged. Zinc is dull and weak, prices being slightly lower.

Copper.—Though many of the larger producers of copper are still adhering firmly to 13c., there is a further tendency toward shading in the outside market. There is very little business, both export and domestic demand having fallen off. The lowest prices are being made chiefly by the small producers. An advance report of the United States Geological Survey shows that the total production of primary copper in the United States in 1920 was 1,209,000,000 lb., which, if compared with the production in 1919, shows a decrease of 6 per cent.

Tin.—A little business was done on Tuesday of last week for forward delivery at 28.25c., but the market was almost lifeless during the remainder of the week. On Monday of this week there was a little more selling for forward delivery at 27.25c. There have been no developments of interest. Prices have softened because of the British exchange situation and also on account of freer offerings both here and at London. The London market is declining, to-day's quotation on spot Straits being £161 10s. as compared with £166 5s. one week ago.

Lead.—The American Smelting & Refining Co. continues its price of 4.40c., New York, and is taking most of the limited business that is being placed. In the outside market higher quotations are named; hence trading in the outside market does not amount to much. There are no new features.

Zinc.—Prices are easier, July shipment now being quoted at 4.75c., New York, August, 4.80c. and September, 4.85c. Very little business is being placed. In high grade zinc there is a slightly improved demand.

Aluminum.—The Aluminum Co. of America on July 15 reduced the price of 99 per cent plus ingot virgin aluminum to 25c., f.o.b. shipping point, making the price for the 98-99 per cent 24.50c.; No. 12, 23.80c., and sheets, 39.10c. These prices are still from 2 to 2½c. above the prices quoted on imported aluminum. The market continues very dull.

Antimony.—Lower prices are noted, carloads for July shipment now being available at 4.65c. Recent cables from the Orient indicate fairly large stocks.

Old Metals.—The market is generally unchanged and business is still impossible. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible	12.00
Copper, heavy and wire	11.00
Copper, light and bottoms	9.00
Heavy machine composition	10.50
Brass, heavy	7.00
Brass, light	5.25
No. 1 red brass or composition turnings	8.00
No. 1 yellow rod brass turnings	5.25
Lead, heavy	4.00
Zinc	3.00
Lead, tea	3.00

Chicago

JULY 19.—Tin, lead and spelter have declined. The fall in exchange has influenced the slump in tin, while both lead and zinc are being pressed on the market at lower prices. Purchasers who were unable to fill their requirements at the quotations 10 days ago now hesitate to buy. We quote lake copper at 13.25c. in carload lots; tin, 29c. to 29.50c.; lead, 4.35c.; spelter, 4.35c.; antimony, 7.50c. On old metals we quote copper wire 7.50c.; crucible shapes, 7.50c.; copper clips, 7.50c.; copper bottoms, 6.50c.; red brass, 6.50c.; yellow brass, 4.50c.; lead pipe, 2.50c.; zinc, 1.75c.; pewter, No. 1, 17c.; tin foil, 18c.; block tin, 21c., all being buying prices for less than carload lots.

St. Louis

ST. LOUIS, July 16.—No interest is being shown in the non-ferrous markets, trade being exceptionally dull. Lead is quoted at 4.40c. in carlots and spelter at 4.25c. to 4.35c. We quote Lake copper carlots at 13.48½c.; tin, 28.86c. and antimony, 5.38½c. On old metals we quote: Light brass, 4c.; heavy yellow brass, 6c.; heavy red brass, heavy copper and copper wire, 8c.; light copper, 7.50c.; pewter, 17c.; tin foil, 18c.; zinc, 2.75c.; lead, 3c.; tea lead, 2c.; aluminum, 9c.

Italian Iron and Metal Market

MILAN, ITALY, June 30.—The current price for finished iron and steel has fallen to 85 lire per 100 kilos, free cars Italy. Same material can, however, be purchased as low as 70 lire from stock as there have been practically no sales and also owing to the fact that many merchants are willing to sell at a loss in order to obtain cash. This condition makes purchases from foreign countries practically impossible. It must be noted that the present duty on iron and steel is from 6 to 9 lire per 100 kilos gold which is equal at to-day's rate of exchange to 18 to 27 lire.

Business is completely at a standstill. There have been several large failures due to depreciation in the value of merchandise. Many importing firms have gone out of business. This was to be expected as since the war there was an over number of small firms, who during the war were able to make a small fortune, but who lost it in a very short time during these last few months of crisis. This will help other firms who will be able to overcome this period of hardship.

Many articles have gone down in prices these last weeks. The Facisti have been the main reason for these reductions and they have had several killed in fights with Socialists, who have also sustained several losses. They started by obliging the market people and peasants to reduce prices, otherwise they would confiscate all merchandise.

Here are this week's prices in lire, f.o.b. Milan per 100 kg.:

	April 17	May 22	June 30	Cents per Lb. June 30
Copper, electrolytic	630	575	600	13.20
Copper sheets	1100	1020	1020	22.44
Brass sheets	970	900	900	19.80
Brass wire	950	875	875	19.25
Brass rods	580	550	550	12.10
Brass tubes	1150	1070	1070	23.54
Black sheets base, 4 mm.	160	160	150	3.30
Galvanized sheets No. 20.	285	250	240	5.28
Tin plate, standard, per case	215	180	165	\$8.08

Reduced Coke Production

UNIONTOWN, PA., July 18.—A further decrease in coke production and a slight increase in coal output have marked the past week in the Connellsville bituminous region. Coke production of W. J. Rainey, Inc., has been decreased to about 40 per cent through suspension of ovens at Paul and Revere.

Robeson Iron Co., Robeson, Pa., has placed an order for furnace coke requiring delivery of 7000 tons monthly during July, August and September through W. L. Byers & Co., at a price reported to be \$3.25 a ton. The coke is being taken from the Herbert plant of the Connellsville Central Coal & Coke Co. An export order of 17,000 tons of coal has been shipped during the past fortnight to Holland.

CZECHO-SLOVAKIAN MARKET

Foreign Competition Felt—Unemployment Benefits Increase—Many Plants Merge

(Special Correspondence)

PRAGUE, CZECHO-SLOVAKIA, June 22.—If there is not an open shop movement over here in Europe, the reasons are to be sought in the entirely changed economic and political post-bellum conditions of revolution-ridden Central Europe. There are plenty of other causes, however, of industrial unrest, and the antagonism between socialist labor unions and the so-called yellow or Christian or national unions has been responsible for many strikes and lockouts. To this antagonism must be traced the origin of the trouble in the Czecho-Slovakian metal industry.

In the middle of May the workers at three of the largest Prague works struck to enforce their demand that none but socialist labor union members should be employed. Employers retaliated by a lockout affecting 54 works with about 25,000 hands, at the same time formulating the following demands: Reduction of wages by 10 per cent; dismissal of 10 per cent of the workmen, and a shortening of working hours by 10 per cent. They claimed that the prevailing slump justified a greater reduction in the number of hands and that living costs had dropped by far more than 10 per cent. A protracted struggle went on for several weeks, when eventually a settlement was reached through the arbitration of the Ministry of Social Welfare. On the surface it would appear that labor scored, since the employers had to withdraw all of their demands and a compromise was reached in respect to labor's share in the management. Labor, however, won a Pyrrhic victory, since it cost the unions about 50,000,000 kronen and the employers gained by the stoppage during the business depression.

Unemployment Benefits Large

The general stagnation of business in Czecho-Slovakia continues to gain. Unemployment benefits were paid 30,000 persons in May, of which 45 per cent were in the textile industry, 20 per cent in the building trades and 5 per cent in the metal industry.

The removal of tariff protection which existed before the war has permitted severe competition by French and German products aided by the high freight rates paid on foreign ores, the poor quality of domestic ores, the unfavorable coal situation and the specialization of products by foreign manufacturers. The Witkowitz steel works, to avert a curtailment of operations, are producing certain grades of pig iron and rolled material for stock to be cleared off when the market improves. The Trzynietz iron works of the Mining & Smelting Co. plans to lay off a considerable number of its workers unless the Government comes forward with orders, and the Prague Iron Industry Co. has operated its Kladno plant on reduced schedule for some time.

Price Reductions in June

Iron prices were reduced on June 1, but it remains to be seen whether the cut will stimulate the market. We quote now as follows per 100 kg., f.o.b. maker's mill:

	June 1 Kr.	June 1	May 1 Kr.
Foundry pig iron No. 1.....	225	\$2.95	245
Foundry pig iron No. 3.....	223	2.92	243
Remelted.....	250	3.27	270
Bars and channels.....	360	4.72	385
Iron bars.....	375	4.91	400
Beams.....	420	5.50	445
Beams over 35 kg.....	370	4.85	390
Beams under 35 kg.....	375	4.91	400
Sheets			
No. 6 U. S. S. gage and up.....	450	5.90	480
No. 6 to 11.....	460	6.02	500
No. 11 to 20.....	470	6.15	510
No. 20 gage and smaller.....	480	6.29	520

The last price reduction took place in February, when prices were cut by 50 to 60 kronen, on the average.

Numerous Merger Negotiations

Indications are that the iron and engineering industry are depending upon a co-ordination of efforts to

regain lost foreign markets. Following the lead of the machine builders, the iron industry has also organized an export association, the Prague Iron Industry Co., the Mining & Smelting Co. and the Witkowitz Steel Works having established a community of interests organized on the lines of a syndicate. Agreements have been reached on concentration, and specialization of production, uniform sales conditions, etc., and a joint sales office has been established at Bruenn with a branch at Prague. The merger was largely influenced by fuel and raw material conditions. The Prague Iron Industry Co., while possessing ore mines, is short of coke, of which the Witkowitz works has a large surplus since shipments to Austria have considerably diminished. The principal countries with which trade will be sought are Austria, Jugo-Slavia, the Balkan States and the Russian border states. The Prague Iron Industry Co. and the Mining & Smelting Co. have established consignment stores in Jugo-Slavia to prevent foreign competition. The Government is lending active support to the movement. Negotiations are also pending between the Prague Iron Industry Co. and one of its principal customers, the Mannesmann Tube Works, Ltd., at Komotau, for the establishment of a working agreement to be reached by an exchange of shares.

Machinery Market Depressed

Very little improvement is reported in the machinery industry. There have been some orders from Roumania, but the general situation is far from satisfactory. The association of agricultural machinery and implement manufacturers under pressure of foreign competition has been forced to reduce prices. Orders booked by the locomotive and rolling stock builders have not met expectations and negotiations with France for the delivery of factory equipment for sugar plants are still pending. The bicycle industry reports a slump in exports by about 80 per cent since Russia, the Balkan markets and Poland appear to have covered their supplies by now, while the other Central European countries are barring imports by a prohibitive customs tariff.

Hearings in Ferromanganese Case Ended

Hearings in the case of alleged British dumping of ferromanganese in the American market were closed in New York, July 19, with the final session before the representative of the Federal Trade Commission, Examiner Edward M. Averill. The commission's counsel was Major Lambert. The respondents, Crocker Brothers, C. W. Leavitt & Co., and Frank Samuel, were represented.

Prices of ferromanganese current in 1919, as quoted by various trade journals of the United States and Great Britain, were offered in evidence, as well as the statistics of the United States Bureau of Mines, showing the consumption of ferromanganese in the United States over a 10-year period. Following the giving of testimony of the firms represented, both sides rested their case.

Respondent for C. W. Leavitt & Co. during the hearing pointed out that the British sellers in lowering the price for ferromanganese sold in the United States were merely anticipating the diminishing value of the pound sterling and that their quotations in dollars were based upon how many pounds sterling these dollars would buy. Joseph E. Davies, former chairman of the Federal Trade Commission, who represented Crocker Brothers, stated that the figures produced by the commission as representing the actual market price of ferromanganese in England were unreliable and that sales that had been made by Crocker Brothers in the United States were in most instances in excess of the prevailing British price. He added that when American producers had been charging as high as \$430 per ton, Crocker Brothers were selling at not to exceed \$200 per ton, which was greatly to the advantage of American consumers.

The case is in the hands of Federal Examiner Averill, who will report his findings to the Federal Trade Commission for final action.

PERSONAL

Walter S. Tower, trade adviser of the Consolidated Steel Corporation, New York, has taken up work with



WALTER S. TOWER

the Bureau of Foreign and Domestic Commerce, Department of Commerce, as mentioned in last week's IRON AGE. Mr. Tower's first duties will consist of co-operating with the United States Shipping Board in gathering statistics, such as those relating to trade routes, etc. Later he will go abroad to study trade conditions and will give particular attention to the iron and steel industry, which is considered to be the key to reconstruction. Upon his return to Washington, it now has been announced, Mr. Tower will head the iron and steel division of the Bureau. He has traveled extensively in North and South America, studying trade conditions, and has written several articles on that subject.

B. M. W. Hanson, formerly vice-president and general manager Colt's Patent Fire Arms Mfg. Co., has become president of the Hanson-Whitney Machine Co., Hartford, Conn.

F. Karl Schneider has purchased the plant and equipment of the Albion Engineering Co., Philadelphia, operating it as a general engineering and machine shop. He has left the Krebs Pigment & Chemical Co., Newport, Del.

N. Price Whitaker, vice-president Whitaker-Glessner Co., has been appointed a member of the West Virginia state highways commission by Governor Morgan, and has accepted the appointment. This commission will have charge of the expenditure of \$50,000,000 recently approved by voters of the state for road improvements.

I. A. Baum has reorganized the La Salle Engineering Co., Chicago, under the name of Boyer, Baum & Co., with offices in St. Louis, for consulting engineering in structural steel, reinforced concrete and timber structures.

Edmund S. Glauch, formerly assistant mechanical engineer for the Harrisburg Foundry & Machine Works, Harrisburg, Pa., recently opened an office as mechanical engineer in Harrisburg.

L. J. Campbell, president Electric Alloy Steel Co., Youngstown, Ohio, who served as a lieutenant colonel with the United States Army during the war, has been chosen as one of the representative Americans to officially receive the thanks of the French Government for the part this country took in the war. The Americans are to tour the leading cities of France next month as guests of honor, to attend the unveiling of many memorials and to otherwise receive attentions which will have historical significance.

Franklin G. Hubbard has become president and mechanical engineer of the Lacey Mfg. Co., Bridgeport, Conn., specializing in die and tool work. He was formerly associated with the H. E. Harris Engineering Co. and Hubbard & Harris, consulting engineers, Bridgeport.

C. H. Mount, formerly sales engineer Jeffrey Mfg. Co., Cleveland, has accepted a similar position with the Stearns Conveyor Co., Cleveland.

Charles W. Hughes, formerly with the Norwalk Iron Works Co., South Norwalk, Conn., is now with the Dixie Engineering & Insulating Co., Atlanta, Ga., a sales organization of the Norwalk company.

D. V. Waters is now mechanical engineer with Gould & Eberhardt, Irvington, N. J., having formerly

been assistant to the chief engineer of the Ivers-Lee Co., Newark, N. J.

Henry Rodemeyer has become superintendent of the George A. Hebb Spring Co., Newark, N. J., having resigned from the Cook Spring Co., New York and Ann Arbor, Mich.

W. L. Neff has become New York representative of the Davenport Machine Tool Co., Rochester, N. Y. He was formerly with the Brown & Sharpe Mfg. Co. at New York. C. R. Burt, until recently with the Davenport company, has become president and general manager of the New Process Gear Corporation, Syracuse.

W. A. Carew, formerly general superintendent Morgan Engineering Co., Jersey City, N. J., has become superintending engineer for Row & Davis Engineers, Inc., New York.

R. K. Stockwell, until recently general sales manager Robins Conveying Belt Co., New York, has been appointed British engineering manager for that company, with headquarters in London.

Frank J. Fahey, vice-president Gillette Safety Razor Co., Boston, sailed July 16 for Europe on the White Star liner, Olympic, to visit the company's European branches.

Everett Morss, president Simplex Wire & Cable Co., Boston, has been elected president of the Boston Chamber of Commerce. Mr. Morss is chairman of the executive committee and a member of the corporation of Massachusetts Institute of Technology.

George H. Kennedy, formerly a machinist at the William Tod works, Youngstown, Ohio, of the United Engineering & Foundry Co., Pittsburgh, has accepted a position as instructor of machine shop practice in the Kamehameha School, an endowed institution, in Honolulu.

Peter Eyermann, who during the war was connected with steel work in Austria and since the armistice has been manager of the Bohemian State Steel Works, was recently appointed manager of the Austrian arsenal at Vienna. Mr. Eyermann was engaged in steel work engineering in the United States about 20 years ago, particularly in connection with the introduction of the blast furnace gas engine. Later he had offices at DuBois, Pa. On going to Europe some years ago he was connected for a time with the steel works at Witkowitz, Austria.

J. H. Drury, treasurer Union Twist Drill Co., Athol, Mass., and Robert B. McSkimmon, director S. W. Card Mfg. Co., Mansfield, Mass., who sailed for Europe early in May, returned last week.

Robert S. Hammond, district sales manager Whiting Corporation at Pittsburgh, has been transferred to Chicago in the same capacity.

Morris Ferer has associated himself with Abe Feinberg, Muncie, Ind., as general manager. He was formerly a member of the firm of Aaron Ferer & Sons, St. Louis. The company will continue to specialize in scrap iron and steel.

F. E. Norris, formerly general superintendent of the Sharon and Farrell works of the Carnegie Steel Co., is expected to return about Aug. 1 from France, where he has resided for two years. He has been supervising construction of an open-hearth plant and rolling mills for the M. Berliot Automobile Co., near Lyons, France. It is understood the company has abandoned plans for additional work after about half completing its plant.

F. R. Dravo, Dravo Contracting Co., Pittsburgh, recently was elected president of the Standard Scale & Supply Co., succeeding A. D. Black, resigned. C. H. Chapelle has been named treasurer of the company. J. B. Johnson and H. W. Keller, vice-presidents, have resigned and their duties are being attended to by Mr. Dravo.

James M. Cherrie, Springfield, Vt., has been appointed superintendent of the foundry of the Athol Machine Co., Athol, Mass., to succeed George Croak, who recently resigned to engage in the foundry business at Boston.

Edward H. Mangan, for several years plant engineer for the Norton Co. at Niagara Falls, has entered the employ of the General Abrasive Co. as sales manager.

Charles E. Hildreth, general manager Morgan Grinder Co., Worcester, Mass., recently acquired by the Greenfield Tap & Die Corporation, Greenfield, Mass., has resigned. His action is based on a desire not to leave Worcester, where he has made his home for more than 50 years.

Daniel N. Bates, traffic manager American Steel & Wire Co., Worcester, Mass., has been retired on pension after 36 years service with the company. Arthur D. Fiske, assistant division freight agent, succeeds Mr. Bates. Charles M. Booth, Worcester district sales agent, likewise has been retired on pension after 27 years service with the company. Albert R. Webb will take over Mr. Booth's duties.

S. V. McLeod has been appointed purchasing agent of the Algoma Steel Corporation, Ltd., with headquarters at Sault Ste. Marie, Ont., vice L. L. Jacobs, resigned, effective July 1.

Robert D. Black, formerly assistant sales manager Black & Decker Mfg. Co., Towson Heights, Baltimore, Md., has been appointed manager of the company's Philadelphia branch office, with headquarters at 318 North Broad Street. He succeeds W. C. Allen, who has been made a special factory representative, with headquarters at the company's Cleveland branch office, 6225 Carnegie Avenue.

William Robert Wilson has been elected president of the Maxwell Motor Corporation. He previously served in important executive capacities with the Studebaker Corporation and with Dodge Brothers.

John D. Nicklis has been appointed manager of supplies and purchases of Manning, Maxwell & Moore, Inc., and affiliated companies, with headquarters at 119 West Fortieth Street, New York.

S. M. Marshall, of Perin & Marshall, New York, who has been in India for the past two years in connection with new construction at the works of the Tata Iron & Steel Co., returned to New York this week.

John Duncan, who has been president of the Wheeling Steel & Iron Co., a subsidiary of the Wheeling Steel Corporation, since about a year ago, resigned recently to go into the coal and railroad business with his brother in St. Louis. Mr. Duncan retires from the steel business after an experience covering more than 30 years. He had been identified with the Wheeling Steel & Iron Co. since 1909, and from 1914 until 1920 was vice-president as well as general manager of sales of that company. Previously, beginning in 1889, he was with the National Tube Co. in St. Louis, the Western Tube Co., Kewanee, Ill., and again with the National Tube Co. as assistant general manager of sales in Pittsburgh.

New Model of Revolving Crane

The Byers Machine Co., Ravenna, Ohio, has developed a new 7-ton model of revolving crane, which can be furnished with steam, electric or gasoline power, mounted on road wheels, railroad trucks of any gage, on so-called crawlers or stationary base for use on barges, flat-cars or piers.

Of the total weight of the crane, 90 per cent is of steel, the gearing, travel mechanism, and all wearing parts, except engines, friction surfaces and parts exposed to wear of cables being of this material.

The crane is ordinarily furnished with 30 or 35 ft. boom which will operate a $\frac{3}{4}$ -cu. yd. clamshell bucket in any material the bucket will handle. For coal handling the machine will operate a 1-yd. bucket. An orange-peel bucket of any type, if not excessive in weight, can also be operated. The machine can be equipped with a 4 kw. generating unit and a 36 in. lifting magnet, pile-driving set, drag line bucket or special steam shovel attachment.

OBITUARY

CHARLES F. BEAMAN, an expert on sheet-metal and sheet-metal working machinery, died on July 7 at St. Catherine's Hospital, Omaha, Neb., after a stroke of paralysis while in Omaha on a business trip for the Adriance Machine Works. He was born in Independence, Iowa, and left home at an early age and engaged in the sheet metal working industry. He was employed by the E. W. Bliss Co. for 32 years. After Mr. Bliss died, Mr. Beaman joined the Adriance Machine Works, remaining until his death, a period of 17 years. Mr. Beaman was a pioneer in introducing sheet metal working machinery into Mexico and was granted special privileges by the Mexican government.

JOHN JERNBERG, since 1882 instructor in forge practice at the Wooster Polytechnic Institute, Worcester, Mass., recently died suddenly from a shock at his old home in Sweden, according to cablegram. He left Worcester in May accompanied by Mrs. Jernberg, to pass the summer vacation abroad. Mr. Jernberg, who was 60 years old, was an expert metallurgist. A son, Henry Jernberg, is manager of the New York office of Fairbanks, Morse & Co., and another son, G. Robert Jernberg, is in charge of publications in the Worcester district of the American Steel & Wire Co.

HERBERT G. PARKER, for 30 years with the Pittsburgh Coal Co., Pittsburgh, and who during the war served with the Fuel Administration in Washington, died in New York July 14, following a long illness. After ending his service with the Fuel Administration, Mr. Parker became affiliated with the Iron Trade Products Co., Pittsburgh, in charge of coal and coke sales, and more recently was identified in a like capacity with A. M. Moreland & Co., Pittsburgh.

JOSEPH C. J. WAINWRIGHT, founder of Joseph C. J. Wainwright & Son, 23 Beverly Street, Boston, metals, died last week at his home in Stoneham, Mass. He was born in Birmingham, Eng., Dec. 10, 1851, coming to this country at the age of 19. He founded the firm which bears his name 30 years ago.

JOHN W. MILLS, president Rhode Island Supply & Engineering Corporation, Providence, R. I., died, July 12, after a long illness at his home, 30 Arnold Avenue, Edgewood, R. I., in his 70th year. He was born in England and came to this country at an early age.

FRANCIS REED, founder of the Francis Reed Co., 43 Hammond Street, Worcester, Mass., sensitive drilling machines, died at his home in that city, July 11. He was 69 years old and a native of Danbury, N. H. In 1889 he purchased the business of George Burnham on Hermon Street and developed it into the present company. He is survived by two sons, Ralph G. and Merton F., both of whom are connected with the company.

CHARLES P. BERRY, secretary, treasurer and general manager Oil City Boiler Works, Oil City, Pa., died at Memorial Hospital, Norwalk, Ohio, July 5, as a result of injuries sustained in an automobile accident. He was about forty-five years of age.

THOMAS H. RABE, 92 years old, secretary-treasurer Canton Malleable Iron Co., Canton, Ohio, died at his home in that city, July 16. He was born in Washington C. H., Ohio, and moved to Pittsburgh when a boy and made his home in that city for about 60 years. He went to Canton in 1892 and established the Canton Malleable Iron Co. He was active in prohibition work.

J. L. LARSON, sales manager Foote Bros. Gear & Machine Co., Chicago, died in that city on July 14.

Property of the Penn Steel & Iron Corporation, Lancaster, Pa., was sold at bankruptcy sale last week to Attorney John E. Malone, Lancaster, as representative for John F. Steinman, Lancaster, trustee. All real estate, equipment, buildings and grounds, which were sold separately, were purchased for a total of \$183,000.

BOOK REVIEWS

The A B C of Iron and Steel. Fourth edition. Edited by A. O. Backert. Pages, xxiv + 408, 7½ x 10½ in.; illustrations, 269. Published by the Penton Publishing Co., Cleveland.

Three additional chapters have been added in this edition, treating of the manufacture of rails, tubular goods and tin plate, all by John D. Knox. The illustrations have been increased from 244 to 269. The previous edition had brought up to date of July 1, 1919, the directory of the iron and steel works of the United States and Canada. In the fourth edition the directory is brought up to Jan. 1, 1921, and contains the titles of the companies, their products and the names of their executive officers.

The A B C of Iron and Steel was intended to give a bird's-eye view of the industry and the various editions have adhered to the original purpose. Naturally a book which aims to treat the industry in a popular manner does not satisfy all engineers and practical men who have had extensive experience in manufacturing, but it does meet the popular demand in a satisfactory manner, being especially helpful to young men who are going into the iron business or men who are desirous of obtaining more information about some branch of the business with which they are not directly connected.

Handbook of Standard Details for Engineers, Draftsmen and Students. By Charles H. Hughes. Pages x + 312, 4¾ x 7 in. Published by D. Appleton & Co., New York.

Compiled to place before engineers and draftsmen, in convenient form, drawings, tables and formulæ of standard details for use in designing, this publication gives a wealth of material ordinarily scattered and not otherwise obtainable all in one volume. It is divided naturally into eight sections: drawings; fastenings; power transmission; pipes, tubes and fittings; rope and chain fittings; miscellaneous details; structural details and useful tables, being completed by an 8-page index. Except for the section on tables, it is well illustrated with different types of details for serving various purposes, each drawing being accompanied for the most part with tabular matter showing the variations in dimensions of different sizes of the detail.

As an addition to the library of those engaged in designing machinery of every description this book ought to find a ready demand. Most of the illustrations are very clear. If any criticism be offered, however, it must be based on the fact that some of the cuts have been made from drawings not specifically designed for illustrating a book.

The Slide Rule: A practical manual. By Charles N. Pickworth. Pages 133, 4¾ x 7 in. Published by D. Van Nostrand Co., New York.

Slight revisions, together with descriptions of some new types of slide rules, mark this seventeenth edition of a well-known work, which, besides explaining the logarithmic theory upon which all slide rules operate, provides many practical examples illustrating the use of the instruments, and useful conversion tables of quantities in common use. The appendix describes some 15 new types of slide rules, and gives methods for extracting fifth roots, for solving algebraic equations, etc.

Year Book of the American Bureau of Metal Statistics. Pages 62, 8¼ x 10½ in.

There is just now activity in the compilation of production statistics in the country's leading industries that is without parallel. In some cases there is the resumption of detailed compilations which were interrupted by the war, but apart from that there has been the starting of new tabulations. Manufacturing

associations are going into this in some instances, notably the National Machine Tool Builders. The statistical work carried on at Harvard and other universities has been broadened. From the American Bureau of Metal Statistics, 115 Broadway, New York, W. R. Ingalls director, there has just come the first issue of its statistical year book, dealing with production, consumption and commercial movements of copper, lead and zinc in the principal countries of the world in the past 10 years. The compilers were occupied principally with filling in gaps in the war period and have been so successful that now the statistical record of the world's production of the leading non-ferrous metals is practically complete to the end of 1920. Many governmental sources have been drawn upon in the compilation.

New Books Received

General Geology and Stratigraphy. By Dr. A. Born. A research record of advancement in geology and stratigraphy from 1914 to 1918. Published by Theodor Steinkopff, Dresden and Leipzig, Germany. Written in German.

Heat Treatment of Soft and Medium Steels. By Frederico Giolitti. Translated by E. E. Thum and D. G. Vernaci. Pages vii + 374; 6 x 9 in. Published by the McGraw-Hill Book Co., 370 Seventh Avenue, New York.

Export Trade Directory—1921 Edition. By B. Olney Hough. 1036 pages; 6 x 9 in. Published by the Johnston Export Publishing Co., 370 Seventh Avenue, New York.

Employee Training. By John Van Liew Morris. Pages xxiii + 311; 8 x 5½ in. Published by McGraw-Hill Book Co., 370 Seventh Avenue, New York.

Foundrywork. By Ben Shaw and James Edgar. Pages xi + 115; 4 x 6½ in. Published by Sir Isaac Pitman & Sons, Ltd., Parker Street, Kingsway, W. C. 2, London.

Handbook of Standard Details, a compilation of the standard types, dimensions, sizes, weights, etc., of the materials and manufactured parts used in the construction of machinery and engineering structures. By Charles H. Hughes. Pages 312; 4½ x 7 in. Published by D. Appleton & Co., New York.

Case-Hardening of Steel. By Harry Brearley. Pages xi + 207; 5½ x 8½; illustrations 97. Published by Longmans, Green Co., Fourth Avenue and Thirtieth Street, New York.

Engineering Index. 1920 Edition. Pages 586; 6½ x 9½ in. Published by the American Society of Mechanical Engineers, 29 West Thirty-ninth Street, New York.

Iron and Steel in Sweden. Descriptions of works, with lists of products and producing capacity. Pages 183, 7½ x 9½ in., profusely illustrated. Published for Jernkontoret (Iron Masters' Association) by Aktiebolaget Svenska Teknologföreningens Förlag, Stockholm, Sweden.

The Federal Administration and the Alien, a supplement to Immigration and the Future. By Frances Kellor. Pages xiv + 80; 5½ x 8 in. Published by George H. Doran Co., 244 Madison Avenue, New York.

A book on belt conveyors has been published by the Link-Belt Co., Chicago. It describes the uniroll and multiroll idlers recommended by the company. Among features of the book, which is known as No. 215, are methods of figuring belt conveyors, price lists, examples suggesting the correct types of belt conveyors for the handling of bituminous coal, by-product coke, sand and gravel, crushed rock, etc. Illustrations of typical installations.

The Link-Belt Co., Chicago, has issued a new steel chain data book, No. 475. In this is presented the heavier rugged steel chains used for power transmission, and also including elevating and conveying chains.

Trade and Office Changes

Vance McCarty, one of the prominent men in the leather belting industry, has been elected vice-president of the Chicago Belting Co. He leaves the Edward R. Ladew Co., a subsidiary of the Graton & Knight Mfg. Co., where he was



VANCE MCCARTY

vice-president. The first six of his 22 years experience in the leather belting industry were spent in various departments of manufacturing. For the last 16 years he has been associated largely with sales work. Vance McCarty started in the leather belting business when he was 18 years old. His first job was in the Riverside Tannery of Fairweather & Ladew, tanners of oak leather. A year later, in 1900, he began to make leather belts in the belting plant of Fairweather & Ladew, at Houston and Eldredge streets, New York. From 1900 to 1905 he worked in every department in the entire plant and at every individual operation in the manufacture of belting. From 1905 to 1918 he was first a salesman for the Pittsburgh branch and, later, in 1907, took charge of that branch and built up a large volume of belting sales. In 1918 Mr. McCarty went to New York and took charge of all belting sales of the Ladew company. He will make his headquarters at the New York branch of the Chicago Belting Co., 127-129 Water Street, New York. He will have charge of all sales in New York, Pennsylvania, Connecticut, Rhode Island, New Jersey, Maryland, Delaware, Virginia, West Virginia, District of Columbia, and will also have supervision over all export sales. He has specialized in selling of belting to the iron, steel and allied industries.

The Pharo Mfg. Co., manufacturer of the Pharo governor, has moved its business from Detroit to Bethlehem, Pa., to give increased manufacturing facilities. At a recent meeting the following officers were elected: R. P. Hutchinson, president; R. D. Chapman, and G. C. Pharo, vice-presidents; W. R. Myers, treasurer; I. W. Gangawer, secretary; B. C. Sawyer, purchasing agent.

The Burroughs Adding Machine Co., Detroit, has acquired the Moon-Hopkins Billing Machine Co., St. Louis, for \$750,000 through a sale authorized by the United States District Court in Detroit. The Moon-Hopkins company was organized in 1907 to manufacture a combination typewriter and billing machine. It employs 125 people and occupies a two-story building. John C. Moon, president of the company, said that the sale was made because the company was not making money and needed additional capital, which it could not get in St. Louis. "The sale was necessary," he said, "to forestall bankruptcy, not immediate, but eventual." Other adding machine manufacturers had contested the sale on the ground that the Burroughs company was endeavoring to get a monopoly of the business. The Moon-Hopkins company has an authorized capital stock issue of \$2,500,000, but the actual capitalization is not so large. Standish Backus, president of the Burroughs company, in a telegram to St. Louis newspapers, said that as far as they can foresee they shall continue to operate the Moon-Hopkins plant and "hope to increase production in the near future."

The Koto Trading Co., Ltd., exporter and importer, has opened a branch office at 15 Park Row, New York, in charge of T. Kusanobu, formerly manager of Mural Trading Co., Ltd., New York. The directorate of the company consists of T. Shiohara, president; T. Furuya and K. Ishikawa, managing directors, and T. Kusanobu, New York representative. Mr. Shiohara is managing director of Sankyo Co., Ltd., Tokyo. Both Mr. Furuya and Mr. Ishikawa were formerly the managing directors of Mural Trading Co., Ltd., which has withdrawn from the field of trading business.

The Canadian Chicago Bridge & Iron Co., Ltd., Bridgeburg, Ont., and Montreal, Que., has changed its corporate name to Horton Steel Works, Ltd., according to an announcement made by C. H. Scheman, general manager of the company. The new name has been selected in honor of the late Horace E. Horton, who founded the organization in the United States in 1865. The Canadian organization was first incorporated in 1913 and the plant at Bridgeburg, Ont., was constructed in that year. Mr. Horton was one of the pioneer engineers of North America. Starting with a timber bridge at Orinoco, Minn., in 1865, Mr. Horton devel-

oped a large business in the design, fabrication and erection of bridges, steel tanks, etc. In the early nineties, he invented the hemispherical-bottom elevated steel tank. A few years ago his son, George T. Horton, now president of the Horton Steel Works, Ltd., invented the elliptical bottom tank with riveted steel riser. In addition to Mr. Scheman, G. S. Sangdahl is district sales manager at Montreal, C. C. Gregory is manager of plant and F. E. Gregory superintendent of erection. The main office and works are at Bridgeburg, Ont.

The name of the parent company, the Chicago Bridge & Iron Works, 37 West Van Buren Street, Chicago, is not changed.

The Foster-Songer Co., Pittsburgh, has appointed William T. Dunn, 10 High Street, Boston, as district sales agent for New England territory for the company's line of pipe and seamless tubing.

The Shields Cutter Co., formerly the Cleveland Milling Machine Co., Cleveland, after Aug. 1 will maintain a branch office and store at 192 Chambers Street, New York. (phone, Barclay 8796), in charge of J. V. Carlin, district manager, for the purpose of serving that district with milling cutters and special metal cutting tools.

B. M. Jones & Co., Inc., Cleveland branch, 115 St. Clair Avenue, N.W., is now being managed by the Connelly & Kendall Co., which has moved into the above address. Messrs. Harry Connelly and Joe Day are giving their personal attention to the sale of Double Mushet high-speed steel and Titanic carbon tool steels. Crerar Adams & Co., Chicago, Western sales agents for B. M. Jones & Co., Inc., will carry Double Mushet high-speed steel and Titanic carbon tool steels in Chicago, as well as Taylor's best Yorkshire iron. R. G. White, manager for the B. M. Jones & Co., Inc., Cleveland branch, has been appointed special Western representative, and will be located in Chicago. His headquarters will be with its Western sales agents, Crerar Adams & Co., 259 East Erie Street.

Barbour, Love & Woodward, Inc., machine tool dealers, formerly of 149 Broadway, New York, have moved from their temporary office and warehouse at 131 Washington Street to their new offices and show rooms at 45 West Eighteenth Street. Surplus stock will be carried in the building for the convenience of those desiring to inspect machines.

The San Francisco office of the Pawling & Harnischfeger Co., Milwaukee, has been moved from the Monadnock Building to 32 Beale Street. R. M. Taylor, district manager for the Pacific Coast, has his headquarters now at the Beale Street address. J. MacFerran Taylor is a new member of the Pacific Coast sales district.

The firm of Davis Brothers, Philadelphia, manufactures railroad spikes, ship, bridge and wharf spikes, and was founded in 1890 by Charles Gibbons Davis, and owned by him. Mr. Davis died April 20, 1921, and the firm is now managed by Edward L. Davis. The estate of Charles Gibbons Davis has applied for a charter of incorporation, so that the business can be continued. Bayard Henry is representing the new corporation. He is the attorney for the estate of Charles Gibbons Davis. The firm is represented by Edward L. Davis, and will continue to be represented by him.

The Gardner General Foundry Co., Gardner, Mass., has notified the Secretary of State, Massachusetts, that its 7 per cent preferred stock has been exchanged for a similar amount of 8 per cent preferred stock.

A Massachusetts charter has been granted the Spencer Thermostat Co., Boston, capitalized for \$25,000 in preferred stock and 250 shares of common stock of no par value. F. Wilder Pollard, 14 Commonwealth Avenue, is president and assistant treasurer, and Laurence K. Marshall, 44 Rogers Avenue, West Somerville, vice-president and treasurer.

The National Machinery Co., bolt, nut and forging machinery, Tiffin, Ohio, has opened an Eastern sales office, room 637, Knickerbocker Building, Broadway and Forty-second Street, New York, in charge of F. J. Mawby.

The Auslander Safety Lock Co., New York, has been incorporated under State laws to manufacture locks and locking devices. The incorporators are J. and B. Zuckerman and J. Halpert. It is represented by Manheim & Wachtell, 1328 Broadway. The former company of this name has filed notice of dissolution.

IRON AND INDUSTRIAL STOCKS

Less Investing Going On and Movement of Quotations Is Narrower

Less investing interest was shown in stocks the past week, consequently there were smaller variations in quotations for same. Usually at this season of the year people with means spend as much time as possible away from business, which in a large measure accounts for the lagging interest in iron and industrial issues. In addition, however, there has been nothing inspiring happening in the steel industry for the demand for mill products has been decreasing with the tendency of prices downward. On the surface it is evident that liquidation in steel securities has passed, otherwise the market for them would have gone lower than it has since last reports. Where net losses are noted, there was no urgent selling, rather a sagging under their own weight, as might be expected with investing buying minimized. Shareholders are awaiting with much interest the outcome of the next meetings of the Bethlehem and United States Steel Corporation directors.

Unmistakable signs are that funds are beginning to accumulate to finance a business expansion movement, but the banks continue to exercise caution in loaning funds on anything but short term notes. Investment in miscellaneous bonds is running close to or above that in Government issues, on average day to day transactions, which in banking circles is taken as an encouraging sign. In past years, an increased demand and higher prices for bonds usually preceded an upward movement in stock values. With some of the important measures before Congress out of the way, it is believed in financial quarters steps will be taken to re-establish our export business through an extension of further credits or by some other means. The domestic railroad situation continues to improve slowly and the time when the carriers will be in the market for steel mill products is drawing closer.

The range of prices on active iron and industrial stocks from Monday of last week to Monday of this week was as follows:

Allis-Chalm. com. 30½-31¼	Int. Har. com. 71¼-75½
Allis-Chalm. pf. 70½-71½	Int. Har. pf. -100¾
Am. Can. com. 25¼-26¼	Lackawanna Steel. 37½-40
Am. C. & F. com. 123-125	Midvale Steel. 23-23½
Am. C. & F. pf. 109-110	Nat.-Acme. 14-15
Am. Loco. com. 80-82	Nat. E. & S. com. 44½-45½
Am. Radiator. com. -68¾	N. Y. Air Brake. 55-56
Am. Steel F. com. 26-26½	Nova Scotia Steel. -28½
Am. Steel F. pf. 80¼-80½	Press. Steel com. 71-73¾
Bald. Loco. com. 72-76½	Replogle Steel. 18½-19
Bald. Loco. pf. 97-97½	Republic com. 44½-49
Beth. Steel com. -43½	Republic pf. -81
Beth. Stl. Cl. B. 45¼-49	Sloss. com. 34-36
Beth. Stl. 8% pf. 99-100	Un. Alloy Steel. -25
Chic. Pneu. Tool. 50-50½	U. S. Pipe com. -15
Colorado Fuel. -26½	U. S. Steel com. 71¾-74½
Cruc. Steel com. 51-56½	U. S. Steel pf. 108½-109½
General Electric. 119½-127½	Vanadium Steel. 27¼-29½
Gt. No. Ore Cert. 27¼-28½	Westingh's Elec. 41½-44
Gulf States Steel. 30-30½	

Merger Postponed

Action on the proposed merger of the Central Steel Co., Massillon Rolling Mill Co. and National Pressed Steel Co., Massillon, Ohio, has been deferred until July 21. At a recent meeting of the stockholders at which there was representation in person or by proxy, of about 85 per cent of the common and preferred stock, the proposed merger was discussed and it is stated that there is apparently not a dissenting stockholder. However, it was thought best to defer action to give all stockholders an opportunity to give their consent

to the consolidation. The companies have sent out a new circular letter to their stockholders, in which they state that they have determined that there must be practically a unanimous vote on the merger.

Assets of Ford Motor Co.

In view of all that has appeared in the public press during the past six months or so regarding the financial condition of the Ford Motor Co., Detroit, the accompanying statement, dated April 30, last, filed by that company with the Massachusetts Commissioner of Corporations, when compared with a statement of condition as of June 30, 1920, filed by the Ford company last year, is interesting.

Because of the disparity of dates covering the following figures, it would be unfair to draw final conclusions based on a period of a year. It is interesting to note, however, that on April 30, last, the company actually owed \$4,597,753 net less than it did ten months previous, as is shown in comparing "accounts" and "notes payable" in the liabilities. At the same time the company was \$24,437,886 better off on cash and accounts receivable. These figures would not suggest Mr. Ford's credit being strained, as some writers tried to make out a short time back.

Another salient feature is the large amount charged off to depreciation, nearly \$25,000,000 more than was recorded June 30, last. The merchandise item shows a shrinkage of \$33,009,854, which may be taken to mean the company pushed cars into representative's hands in the early part of 1921, and then drew down on drafts against such concerns.

Assets of Ford Motor Co.

	April 30, '21	June 30, '20
Real estate	\$71,329,719	\$85,549,726
Machinery	46,459,046	41,661,136
Merchandise	63,848,157	96,858,011
Furniture, fixtures, tools, autos, trucks and teams	44,779,634	
Notes	58,252	
Accounts receivable	51,268,976	62,499,026
Cash	35,667,936	18,921,608
Securities	10,361,963	77,858
Patent rights	81,397	1,126,742
Miscellaneous investments	501,814	
Good will	20,517,985	
Profit and loss	265,674	
Total	\$345,140,557	\$306,695,109

Liabilities

Capital stock	\$17,264,500	\$17,264,000
Accounts payable	44,993,754	15,958,115
Notes payable	3,892,385	35,112,973
Deferred credits	3,027,120	4,861,613
Depreciation	43,493,393	18,654,489
Insurance	89,570	
Taxes	49,502,136	49,163,974
Surplus profit and loss	182,877,696	165,679,132
Total	\$345,140,557	\$306,695,109

The personnel of the company on the two above mentioned dates compare as follows:

1921	1920
Edsel B. Ford.....President.....	Edsel B. Ford
B. J. Craig.....Treasurer.....	F. L. Klingensmith
Henry Ford.....Assistant Treasurer.....	Henry Ford
Edsel B. Ford.....Director.....	Edsel B. Ford
Alfred Lucking.....Director.....	F. L. Klingensmith

A temporary receiver has been appointed for the Fabricated Steel Products Co., Leetonia, Ohio, on application of three creditors with claims totaling \$4,860. The plant will continue to operate under the receiver, it is announced.

First mortgage 6 per cent real estate notes to the extent of \$40,000 of the Axelson Machine Co., Los Angeles, Cal., have been offered in the St. Louis market. The security is the land and plant recently acquired for a branch in St. Louis.

Lackawanna Steel Co. Suffers Deficit

Nearly a million dollar deficit was the outstanding feature of the report of earnings for second quarter of the Lackawanna Steel Co. This contrasts sharply with a profit of \$1,881,946 for the corresponding quarter of 1920. The deficit for the first half of 1921 was \$974,392. The first quarter of 1921 resulted in a profit of \$8,735. The surplus on Dec. 31, 1920, was \$33,812,601. A summary of earnings for second quarter and first half follows:

	Second Quarter		First Half	
	1921	1920	1921	1920
Total net earnings after taxes and ordinary expenses.....	\$384,761.81	\$2,786,107.42	\$282,933.28	\$3,123,017.97
Deduct: Interest on bonds and other obligations:				
Lackawanna Steel Co.	221,912.50	251,745.84	444,137.50	486,325.00
Subsidiary companies	36,979.17	39,266.66	74,791.66	79,366.66
	\$258,891.67	\$291,012.50	\$518,929.16	\$565,691.66
Balance	\$643,653.48	\$2,495,094.92	\$235,995.88	\$2,557,326.31
Less—Appropriations:				
For extinguishment of mines and mining investment.....	9,199.15	59,641.03	62,760.37	113,420.27
For depreciation and accruing renewals.....	330,274.81	553,507.87	675,635.75	1,011,689.11
	\$339,473.96	\$613,148.90	\$738,396.12	\$1,125,109.38
Deficit for second quarter.....	\$983,127.44	\$1,881,946.02	\$974,392.00	\$1,432,225.93

*Profit. †Italics signify deficit.

Machinery Markets and News of the Works

MORE INQUIRY IN WEST

Eastern Markets Quiet, but Chicago Reports Slight Improvement

Reductions of About 15 Per Cent Made by Manufacturers of Sensitive Drilling Machines

Although the machine-tool market continues inactive in the East, some improvement over last month is noted in the Middle West, particularly at Chicago, where a fair amount of prospective business is before the trade. Among the inquiries is one from the H. W. Johns-Manville Co. for 15 machines. Several purchases of small lists of new and used tools have been made in Chicago.

Some Cleveland dealers likewise report a little im-

provement in inquiry, but at Cincinnati, Boston and New York the markets are extremely dull, with both orders and inquiries at low ebb.

The International Nickel Co. still has some equipment to buy for its new plant at Huntington, W. Va.

The United States Glass Co. is expected to put out a list at Pittsburgh soon for equipment for a plant to be built at Shreveport, La.

The Illinois and Rock Island lists, which have been pending at Chicago for some weeks, are still held up and the purchasing departments of these roads are reported to have stated to machine-tool builders that purchases will not be made until substantial reductions have been made in machine-tool prices.

Some of the sensitive drill manufacturers will reduce prices this week about 15 per cent. A lathe company is offering lathes at a discount of about 20 per cent from recent prices.

New York

NEW YORK, July 19.

The best that any of the local machine-tool sellers are doing is an occasional sale of a single machine. Even such orders are not plentiful. Inquiries are likewise few in number and great difficulty is experienced in closing business.

A reduction in prices of about 15 per cent will be made this week by some makers of sensitive drilling machines. The leading manufacturers of motors and controllers have announced reductions of about 10 per cent.

N. D. Jonovitch of Serbia arrived in New York last week to purchase machinery. He may be addressed in care of the Serbian Consulate General, 442 West Twenty-second Street, New York City.

The crane market continues to improve slightly from the standpoint of inquiries and a few sales are reported. The greatest activity the past two or three weeks has been in hand power cranes, some inquiries calling for as high as 15 and 20-ton capacities. An inquiry is being handled by Naylor & Co., 120 Broadway, New York, for a gantry crane equipped with a 2½-cu. yd. bucket for export to France. John A. Savage & Co., Crosby, Minn., have asked for quotations on a 30 to 40-ton, 8-wheel locomotive crane for their Sagamore mine, Riverton, Minn.

Among recent sales are: Industrial Works, a 20-ton, 50-ft. boom locomotive crane to Luria Brothers, Lebanon, Pa., for a new scrap yard in Pittsburgh; Champion Engineering Co., 30-ton, 55-ft. span overhead traveling crane to the American Steam Shovel Co., Marion, Ohio; Milwaukee Electric Crane & Mfg. Co., a 5-ton, 64-ft. span overhead traveling crane to the Lehigh Wilkes-Barre Coal Co., Wilkes-Barre, Pa.; Shepard Electric Crane & Hoist Co., a 4-ton electric hoist with 2-cu. yd. bucket for coal handling and a 5-ton electric hoist to the Pittsburgh Screw & Bolt Co., Pittsburgh, and the Hoisting Machinery Co., 50 Church Street, New York, a 15-ton, 50-ft. boom second-hand Brownhoist locomotive crane to the Dutton Lumber Co., Poughkeepsie, N. Y.

The Swadeshi Brass & Iron Works, 233 Kika Street, Bombay, No. 4, India, of which T. Jagjiwandas & Co. are sole proprietors, is in the market for the following equipment: Cotton ginning and weaving machinery and spare parts; spinning machinery parts only; rolling mills with all equipment for producing square, flat and round angle iron from ¼ to 4-in. sizes and sheets 1-32 to ¾-in. thick from iron scrap, average production eight to 12 tons per day; complete plant and equipment for manufacturing hardware, such as hammers, shackles, shovels, axles, nails, flat and wire, such one ton per day; machinery for wood and metal screws, 200 to 250 gross per day capacity; machinery for

cutlery and surgical instruments; machinery for making iron bolts and nuts from 1 to 2-in. diameter; complete plant for making one ton of steel castings per day from hematite pig iron and iron and steel scrap; also equipment for foundry for casting three to 10 tons per day, with equipment for pattern shop; equipment for blacksmith's shop employing 20 smiths.

The Richmond Screw Anchor Co., Pulitzer Building, Park Row, New York, manufacturer of heavy hardware, has leased the buildings at 251-55 Bush Street and 362-64 Smith Street, Brooklyn, for the establishment of a new plant. The property will be occupied early in August.

The Harrisville Ore & Steel Corporation, New York, has been incorporated with a capital of \$500,000 by H. G. Conway, E. G. Kerr and M. F. Dudek, to manufacture steel products, operate iron ore properties, etc. It is represented by Peaslee & Compton, 501 Fifth Avenue.

The Du Bois & Depollier Co., Brooklyn, has been incorporated with a capital of \$1,000,000 under Delaware laws, to manufacture watch cases and precision specialties. It will succeed to the business of the Du Bois Watch Case Co., 315 Herkimer Street.

The Rudy Way Mfg. Co., New York, has been incorporated with a capital of \$25,000 by J. Harris, W. E. Armstrong and A. Fueheloher, to manufacture radiator air valves and valve protectors, etc. It is represented by M. Eichner, 1545 Broadway.

The Rooney Pump & Transmission Co., New York, has been incorporated with a capital of \$50,000 by M. B. Salzberg, S. Shookoff and P. J. Rooney, 22 William Street, to manufacture pumping equipment and kindred products.

The Perfect Brick & Hollow Tile Co., New York, has been incorporated with a capital of \$3,200,000 under Delaware laws, by Frederick G. Stoeher, Rae Taustine and Thomas G. Chamberlain. The company is represented by the Capital Trust Co., Dover, Del.

The New York Edison Co., 130 East Fifteenth Street, New York, has filed plans for a one-story addition to its 'Waterside' powerplant, 63 x 94 ft., at Fortieth Street and First Avenue, to cost about \$125,000.

The Moore Patents Corporation, New York, N. Y., has been incorporated with a capital of \$500,000 by C. W. Moore, S. Dressler and A. Berres, to manufacture pipe, pipe fittings, plumbing fixtures, etc. It is represented by H. G. Littau, 391 East 149th Street.

The Stevens-Webb Co., New York, has been incorporated with a capital of \$50,000 by R. D. Goldberg, B. Levy and W. S. Doernberg, 1133 Broadway, to manufacture farming implements and other agricultural equipment.

The Dexter Folder Co., 200 Fifth Avenue, New York,

manufacturer of paper folding machinery, feeders, etc., is taking bids for a two-story addition to its plant at Pearl River, N. Y. W. E. Truesdell, 5 Beekman Street, New York, is engineer.

Fire, July 10, destroyed a portion of the plant of the Royal Metal Furniture Co., 125-37 Eighth Street, Brooklyn, with loss estimated in excess of \$200,000, including machinery.

The Rite Electric Lamp Co., New York, has been incorporated with a capital of \$20,000 by I. Rendelman, M. Sonin and S. J. Berkowitz, 898 Broadway, Brooklyn, to manufacture incandescent electric lamps.

The Ringless Piston Co., recently organized under Delaware laws to manufacture automobile engine equipment, will operate in New York, with capital of \$1,000,000. It is represented by J. C. Henriques, 103 Park Avenue.

The Adirondack Power & Light Corporation, Amsterdam, N. Y., has disposed of a bond issue of \$1,000,000, the proceeds to be used for extensions, betterments in plant and system, general operations, etc. J. Ledlie Hees is president.

The Farmers' Portable Mill Corporation, New York, has been incorporated with a capital of \$250,000 by E. T. Thomas, M. Stephens and G. Luehing, to manufacture mechanical equipment for farm service. It is represented by the Thomas Engineering Co., 176 Greenwich Street.

Plans are being perfected for a reorganization of the Willys Corporation, 11 Pine Street, New York, manufacturer of automobiles and automobile equipment. It is said that the two subsidiaries, the Auto-Lite Corporation, Toledo, Ohio, and the New Process Gear Co., Syracuse, N. Y., will be merged into one operating unit, while the new plant on Elizabeth Avenue, Elizabeth, N. J., comprising the former works of the Duesenberg Motors Corporation and additions, will be operated as a separate plant division for the production of the Chrysler six automobile. The reorganization plans include a new bond issue to total about \$20,000,000.

The Kentucky Midland Pipe Line & Refining Co., New York, has been incorporated under Delaware laws with capital of \$5,000,000, to construct a refinery in the Kentucky oil field district. It is represented by Arthur W. Britton, 65 Cedar Street.

The superintendent of lighthouses, Tompkinsville, N. Y., will receive bids up to 3 p. m., July 29, for approximately 300 tons of $\frac{3}{4}$ to 2-in. open and stud link iron mooring chain, also shackles and swivels.

The Percy-Welton Machine Co., New York, has been chartered under State laws to manufacture machine products. The incorporators are S. Waxman, S. B. Klee and L. E. Felix, 217 Broadway.

In connection with plans to commence the manufacture of automobiles at its plant at Long Island City and Oakland, Cal., the Durant Motors, Inc., 1764 Broadway, New York, is said to have placed an order for 50,000 automobile motors with the Continental Motors Corporation, Detroit, Mich., with delivery by Aug. 1. The motors will be shipped at the rate of 150 a day. Production of the Durant cars will begin at about this same time.

The Keystone Appliance Corporation, New York, has been incorporated under Delaware laws with capital of \$2,500,000 to manufacture electrical appliances and equipment. The incorporators are Thomas E. Halle, James L. Watson and F. H. Butchorn. It is represented by the Corporation Trust Co., 37 Wall Street.

The Automatic Coin-Change & Record Machine Co., Bound Brook, N. J., has been incorporated with a capital of \$1,500,000 by Irving J. Palmer, Fred A. Probose and Jeremiah J. Regan, to manufacture coin machines and other automatic machinery and parts. It is represented by John P. Cullen, 403 East Main Street, Bound Brook.

An electric power plant will be erected by the City Council, Gloucester City, N. J., in connection with a new electrically operated pumping plant for the waterworks system, filtration plant and other improvements, estimated to cost about \$202,000. Remington & Vosbury, Camden, N. J., are engineers.

The Modern Optical Mfg. Co., 357 DeWitt Street, Belleville, N. J., has been organized to manufacture optical mountings and other precision specialties. Charles Presbey heads the company.

The Smith Rubber & Tire Co., Inc., Midland Avenue, Garfield, N. J., is arranging for increased production at its plant to develop a maximum output of 600 tires per day. Winfield Clearwater is president.

The Koehler Machine & Tool Co., Newark, N. J., has been incorporated with a capital of \$125,000, by Henry Koehler, Joseph Klopak and John J. Evans, to manufacture machinery, tools, jigs, dies, etc. It is represented by J. Howard Conover, 763 Broad Street.

The Lehigh Valley Railroad Co., Jersey City, N. J., will

install two new ore and coal unloaders at the foot of Chapel Street, of 15- and 5-ton capacity, respectively, estimated to cost about \$461,000, exclusive of foundations. The latter work will cost \$40,000.

The Slip-On Chain Co., Newark, has been incorporated with a capital of \$100,000 by Paul G. Bennett, Ernest E. Ryman and Ernest G. Stauber, to manufacture skid chains, automobile parts, etc. It is represented by Harry L. Tepper, 800 Broad Street.

The Public Service Gas Co., Public Service Terminal, Newark, has filed plans for a one-story addition to the engine department at its plant at 15 Congress Street.

New England

Boston, July 18.

The machine tool market continues inactive. Even sales of individual machines are conspicuously lacking and with the exception of a 60-ton crane for the Amoskeag Mfg. Co., dealers lack live prospects. This is partly attributed to the fact that a large majority of New England metal-working industries are either closed or working on greatly reduced schedules. The outlook for business, however, is not as discouraging as appears on the surface. It is conservatively estimated that \$1,000,000 worth of inactive prospects are in the hands of dealers. Prices have been quoted on this amount and prospective customers are waiting until business conditions warrant the expenditure of funds.

Prices on machine tools show little, if any, change. Some producers, however, are offering larger discounts. The Little Giant Hammer Co., Mankota, Minn., is offering machinery at 30 per cent discount from list, or 10 to 15 per cent more than heretofore. The Pittsburgh Machine Tool Co., Braddock, Pa., lathes, is offering its product at 20 per cent discount. It is understood other manufacturers, while not coming out openly with larger discounts, will accept them.

The S. A. Woods Machine Co., Boston, which went into the production of motors last March, reports a good demand for a new motor recently brought out. It has lately equipped one shop and is installing many others in textile mills. Other motor builders state the demand from textile interests is satisfactory but far below normal.

Manufacturers of high speed cutters have reduced prices 15 per cent, and on high speed end mills, 10 per cent. Some interests are quoting straight shank drills at 50 and 5 per cent discount, as against 50 per cent a week ago. The market on popular selling oil cans, used in machine shops, is 10 per cent lower.

Plans for the proposed one-story repair shop at Greenville, Me., 102 x 218 ft., for the Great Northern Paper Co., Millinockett, Me., are being revised.

Landers, Frary & Clark, New Britain, Conn., have begun operations in a small way in their newly acquired plant, the Greenwood Mills, New Hartford, Conn. Vacuum cleaners will be made.

The business of the Morgan Grinder Co., Worcester, Mass., formerly Churchill-Morgan-Crittisinger, Inc., recently acquired by the Greenfield Tap & Die Corporation, Greenfield, Mass., will immediately be moved to the latter city, instead of waiting until fall, as originally planned.

L. F. Fales, Walpole, Mass., special machinery, contemplates some minor changes in foundry equipment made necessary by the installation of a No. 5 Whiting cupola of 40-ton capacity. This department nominally employs about 100 molders but to-day has only 40 on the payroll and is operating three days a week. S. A. Merrill is superintendent.

The Silentflush Valve Mfg. Co., Springfield, Mass., capitalized for \$300,000, has taken out a charter. Arthur W. Morris, 54 Buckingham Street, is president, and Robert M. Keating, 73 Taylor Street, treasurer.

The Builders Iron Foundry, 9 Coddington Street, Providence, R. I., will erect a one-story addition, giving approximately 12,000 sq. ft. of increased floor space.

A new power house will be erected at the textile mill of the Ansonia O. & C. Co., Ansonia, Conn., in connection with a new manufacturing extension, estimated to cost about \$75,000.

The New England Power Co., 35 Harvard Street, Worcester, Mass., has disposed of a bond issue of \$1,250,000, the proceeds to be used for the erection of a new power plant, with initial generating capacity of about 5500 hp.

Allis Freedman, 27 Church Street, Springfield, Mass., is planning for the erection of a new one-story, brick machine shop to cost about \$20,000.

The Richard French Iron Works, Worcester, Mass., has acquired property on Howe Avenue, Millbury, Mass., for a new plant to replace its Worcester works, recently purchased by the Arcade Malleable Iron Co. Plans for a number

of buildings are in preparation, with main structure to be one-story, 50 x 120 ft. Construction will begin at an early date to have the plant ready for operation in the fall.

A new power plant, with 100 ft. stack, will be erected by the M. J. Whittall Associates, Worcester, in connection with the erection of a new weave shed at their carpet mills, estimated to cost about \$125,000.

The Atlas Die Casting Co., Worcester, Mass., recently organized with a capital of \$200,000, has leased space in the building at 41 Jackson Street, for its new works.

The Industrial Appliance Co. of New England, Boston, has been chartered under State laws to manufacture mechanical and engineering specialties. William W. Cummings is president, and Gordon W. Russell, 235 Brewster Terrace, Brookline, Mass., treasurer.

The Robinson Anti-Splash Tire Co., Boston, has been incorporated with a capital of \$200,000, to manufacture automobile tires. Charles A. Robinson, 3960 Washington Street, is president and treasurer.

The Frank H. Fargo Co., Bridgeport, Conn., has been incorporated with a capital of \$75,000 by Frank H. Fargo, Stratford, Conn.; H. W. Graves, New Haven, Conn., and J. J. Beckwith, Jr., 61 Livingston Place, Bridgeport, to manufacture steel and metal furniture and parts.

The Two-In-One Signal Lamp Corporation, New Haven, Conn., has been incorporated with a capital of \$50,000 by J. M. Chapnick, 279 Whalley Avenue, and I. Fine, 607 Elm Street, New Haven, to manufacture electric lamps and signal devices.

The Connecticut Metal Bed Co., New Haven, Conn., has been incorporated with a capital of \$25,000 by G. E. Tester, 625 Orange Street, and associates, to manufacture metal bedsteads and similar products.

Philadelphia

PHILADELPHIA, July 18.

The American Motor Body Co., Glenwood Avenue near Eighteenth Street, Philadelphia, has filed plans for an addition. Improvements will also be made in the present works.

The Philadelphia Machine Screw Works, Inc., Philadelphia, has been incorporated with a capital of \$25,000 to manufacture machine screw products and other mechanical specialties. A. L. Barbier, 2132 North Eighteenth Street, is treasurer.

The Kilbourne & Jacobs Mfg. Co., Commercial Trust Building, Philadelphia, has arranged for a bond issue of \$900,000, to be used in connection with general operations for the manufacture of wheelbarrows, scrapers, trucks, trailers, etc. J. R. Kilbourne is president and general manager.

The Union Tank Car Co., 21 East Fortieth Street, New York, has leased a portion of the Hog Island Shipyard, Philadelphia, comprising the section known as steel yard "A," and will use the property in connection with its repair shops now in the Point Breeze district.

The Tioga Engineering & Pattern Co., Philadelphia, is being organized by Albert G. Schleber, Jr., William S. Cox and Benjamin G. Slaughter, to manufacture machinery and parts, and other metal products. Application for a State charter will be made Aug. 12. It is represented by J. Edgar Butler, 1524 Chestnut Street.

The M. J. Dougherty Co., Philadelphia, Pa., manufacturer of piping, etc., has removed its plant to new quarters on Washington Avenue, occupying the block from Twenty-fourth to Twenty-fifth Street, where increased fabricating and production facilities will be provided.

The Pennsylvania Rubber Products Corporation, Philadelphia, has been incorporated under Delaware laws with capital of \$500,000 to manufacture mechanical rubber products. The company is represented by F. R. Hansell, Land Title Building.

The American Chemical & Sugar Machinery Co., Colonial Trust Building, Philadelphia, has acquired the plant of the Harrison Chemical Co., fronting on the Delaware River, Chester, Pa. The new owner will remodel the buildings, and plans for the installation of equipment at an early date. It is said that employment will be given to 200 operatives.

The Coodel Pneumatic Valve Co., Camden, N. J., has been incorporated with a capital of \$75,000 by Thomas F. Delaney, Charles H. Cooke and William C. Casperson, to manufacture valves and other mechanical products. It is represented by the New Jersey Corporation Guarantee & Trust Co., Camden.

The Pennsylvania Supply & Mfg. Co., Allentown, Pa., is being organized by Charles B. and George A. Kuhns, Shamokin, Pa., operating a local works under the name of Kuhns Brothers, for the manufacture of cornices, ceilings, ventilators and kindred metal products. The new company

will specialize in a similar line of manufacture, including architectural metal work, skylights, etc., and has acquired about 15,000 sq. ft. of floor space at Church and Chestnut streets, Allentown. It is planned to commence production early in August. Myron R. Miller, Allentown, is also interested in the new company.

John E. Malone, Lancaster, Pa., has acquired the plant of the Penn Iron & Steel Corporation, Plum Street, for \$108,000, covering ground, buildings and equipment. The miscellaneous machinery will be disposed of in individual lots. The plant at one time was known as the Norris Locomotive Works.

The Pennsylvania Department of Forestry, Harrisburg, Pa., is planning for the installation of 50 steel towers in different parts of the State forests, to be used for observation purposes in connection with fires.

The Pennsylvania Rubber Co. of America, Philadelphia, has leased the entire building at 857 North Broad Street, totaling about 14,000 sq. ft., for a local establishment.

The Schimmel Electric Supply Co., Philadelphia, Pa., has been incorporated with a capital of \$330,000 to manufacture electrical equipment and supplies. It will take over the business operated under this name at 318 Market Street. I. D. Schimmel is treasurer.

W. E. S. Dyer, Land Title Building, Philadelphia, engineer, has completed plans for the erection of a new one-story power house at the plant of W. H. and E. A. Margerison & Co., Front and Lehigh streets, manufacturer of towels, etc.; and for a new power house and coal storage plant at the works of the Enterprise Furniture Co., Glen Rock, Pa. Construction of both plants will begin at once.

Buffalo

BUFFALO, July 18.

Fire, July 10, caused damage of \$60,000 to the plant and machinery of the Archer-Daniels Linseed Oil Co., Louisiana Street, Buffalo.

L. G. Schoepflin & Co., Buffalo, automobile trucks, now temporarily located at Ellicott and Washington streets, has had plans prepared for a new two-story service and repair works at 306 Franklin Street, estimated to cost about \$60,000.

The Sinclair Consolidated Oil Corporation, 120 Broadway, New York, is said to be negotiating for the purchase of property at Niagara Falls, N. Y., as a site for a new oil refinery, estimated to cost in excess of \$2,000,000 with machinery.

A new one-story power house will be erected by the Oswego Shade Cloth Co., Oswego, N. Y., at its plant on Utica Street.

The Rochester Gas & Electric Co., Rochester, N. Y., has disposed of a bond issue of \$7,000,000, the proceeds to be used for plant extensions and improvements, general operation, etc. Robert M. Searle is president.

Arrangements are being made for dismantling the plant of the Rochester Auto & Tool Co., Rochester, N. Y., and the removal of the equipment to Jaslo, Poland. It is organized under State laws with capital of \$75,000, and the stockholders are of Polish descent. The works were established about two years ago.

Baltimore

BALTIMORE, July 18.

The Seaboard Iron & Steel Co., 905 Lake Drive, Baltimore, has awarded contract to J. Henry Smith, 1426 Light Street, for the erection of its new plant on South Pica Street. Construction will begin at once.

The General Steel Products Co., 33 South Gay Street, Baltimore, has been incorporated with a capital of \$50,000, and 500 shares of stock, no par value, by Edgar F. Kirwan, William G. Levinson and Henry L. Fleming, to manufacture metal products.

A. L. Flint, general purchasing officer, the Panama Canal, Washington, will receive bids until 11:30 a. m., Aug. 3, for material for the Canal Zone, including steel, boiler tubes, wire and cable, motors, pumps, electrical equipment, tractor mowers, nails and other equipment, all as set forth in Circular 1453. The assistant purchasing agent is located at 24 State Street, New York.

The American Aircraft, Inc., 1304 Fidelity Building, Baltimore, has been incorporated with a capital of \$1,000,000 by William H. Campbell, George O. Blome and Robert J. Stewart, to manufacture airplanes, hydroplanes, motors, etc.

The City Council, Frostburg, Md., has perfected plans for the installation of new electrically operated pumping ma-

chinery for the municipal waterworks, to consist of one pumping unit with capacity of 300 gal. per min., and one of 100 gal. per min., with motors, switches, controlling apparatus, etc.

The Wrapping Ad Machine Co., Towson, Md., has been incorporated with a capital of \$100,000 by Jorgen I. Haase and Jesse T. Dowling, Towson, to manufacture paper wrapping machinery, paper holding equipment, etc.

The Tyler Airless Tube Co., 757 Calvert Building, Baltimore, has been incorporated with a capital of \$100,000, by Edgar L. Wade and William J. Murphy, to manufacture automobile tires and tubes.

A. L. Flint, general purchasing officer, the Panama Canal, Washington, will take bids up to 10:30 a. m., Aug. 31, for the purchase of 15 locomotives, offered for sale by the department, as set forth in Circular 1454.

The Flame Ignition Unit Co., 614 West North Avenue, Baltimore, has been incorporated with a capital of \$110,000 by William H. Martin, John K. Brown and Allen F. North, to manufacture flame ignition unit devices.

The United States Shipping Board, Washington, is planning for the construction of a new electric power plant at Craney Island, near Norfolk, Va., and the installation of an electrically operated pumping plant.

The Thompson Mfg. Co., Washington, has been incorporated with a capital of \$350,000 under Delaware laws by James T. Thompson, H. Leroy Goff, and H. N. Wayne, Washington, to manufacture electric lighting and heating equipment and devices. It is represented by the Colonial Charter Co., Ford Building, Wilmington, Del.

A new one and two-story electric power plant and ice-manufacturing plant, estimated to cost \$75,000, will be constructed at the State Hospital for the Insane, Goldsboro, N. C., Dr. W. W. Faison, director. Plans are being prepared by Wiley & Wilson, Lynchburg, Va., engineers. Bids will be asked at an early date.

The Red Cedar Chest Co., Altavista, Va., will break ground at once for rebuilding its plant, recently destroyed by fire. The new factory will be 60 x 500 ft., and is estimated to cost \$125,000 with machinery. Lockwood, Green & Co., 101 Park Avenue, New York, are engineers.

The Bacher Machine & Grinding Co., Wilmington, Del., has been incorporated with a capital of \$100,000 by Horace G. Eastburn, Franklin S. Bunting and George J. Bacher, 365 Delamore Street, Wilmington, to manufacture machinery and tools.

Ohio

CLEVELAND, July 18.

Some dealers report a little improvement in inquiry for small lots of machinery for equipping new shops, but prospective purchasers are slow in placing orders and aggregate sales the past week were very light. The Osborn Mfg. Co. has taken an order from the Navy Department for seven power molding machines for the Philadelphia navy yards and for a large power molding machine for an Eastern foundry. Inquiries for molding machines have improved somewhat. A manual training school in Erie, Pa., is inquiring for a number of machine tools. A Cleveland dealer has sold three carloads of used machinery, amounting to \$16,000, from the plant of the Enterprise Mfg. Co., Cleveland, for the Federal vocational school, Valparaiso University, Valparaiso, Ind.

Manufacturers of punching and shearing machinery are getting practically no inquiries. Local machine-tool manufacturers and dealers do not look for much change in the situation within the next few weeks, but expect some revival in buying early in the fall.

In Cincinnati there are no apparent signs of improvement in inquiries or orders for machine tools, although the market is not entirely devoid of either. Inquiries are reported from Mexico, and a company manufacturing planers is understood to have shipped an order for three machines to a foreign buyer. During the past week an inquiry for a number of tools came through the office of the National Machine Tool Builders' Association for a school in India. A manufacturer of conveying machinery reports activity, the shipments being made East. The Big Four has not purchased against its recent inquiry nor has the Illinois Central taken action yet in regard to its recent list, previously reported. Resumption of railroad shop work has begun in the Zanesville shops of the Baltimore & Ohio Railroad, which have been closed for the past six months. The market for used machinery is generally quiet, although some sales have been made.

The Fisher Lock Co., Hamilton, Ohio, has been recently incorporated for \$50,000. The plant is located at Seventh and Walnut streets. It is understood that most of the equipment has been installed and work will begin very soon.

The incorporators include Wilbur R. Black, Joseph Fisher, Thomas Zollers and Walton Bowers.

The Bowman-Vaughn Co., Lisbon, Ohio, will erect a new factory for the manufacture of toys.

The Central Welding Co. is a new company which has started a plant at 1065 Twelfth Street, Canton, Ohio. Glenn E. Wilson, formerly with the Oxweld Acetylene Co., Chicago, is president and general manager and Harvey Winkleman, vice-president and assistant manager.

The Acme Cultivator Co., Salem, Ohio, recently incorporated with capital stock of \$50,000, contemplates the erection of a plant for the manufacture of cultivators.

The Lima Sheet Metal Products Co., Lima, Ohio, has under erection a new plant, involving an expenditure of \$110,000 and is reported to have placed orders for \$40,000 worth of equipment. The works will include a main building, 60 x 234 ft., and three wings, each 40 x 60 ft.

The Chisholm-Moore Mfg. Co., Cleveland, has taken an order for a complete overhead track system for the new Huntingdon, Pa., plant of the Pierce, Butler & Pierce Co., Syracuse, N. Y., manufacturer of plumbing, heating and steam equipment.

Pittsburgh

PITTSBURGH, July 18.

Both actual and prospective machinery business in this section is excessively dull. The International Nickel Co. has yet to buy the tables, small motors, saws and shears for its new plant at Huntington, W. Va., and the United States Glass Co., which soon will start work on a new plant at Shreveport, La., is expected to put out an inquiry for the necessary equipment. An inquiry has reached this market from the Wagner Mfg. Co., Sidney, Ohio, aluminum ware, for a vertical milling machine for milling steam cookers. It is possible that this requirement will be met from a used machine. A local manufacturer's agent reports the sale of three motor-driven wood-working machines for shipment to a West Virginia lumber company, and also has disposed of two wood-working machines for a manual training school in that State. The same house sold a 16-in. quick change gear engine lathe to a Johnstown, Pa., coal mining company. All of these machines were taken from stock and replacement orders are unlikely for the reason that it is the inclination of this seller and others to get stocks down to the minimum before entering new orders. Little or nothing is going on in cranes at present. The Wheeling Steel Corporation has put out an inquiry for a 5-ton overhead for the Beech Bottom, W. Va., plant of the Whitaker-Glessner Co. The Greenville Steel Car Co. is expected to close for a crane late this week, but it is announced that the Crane Co., Chicago, which is putting up a warehouse here, has decided to defer the construction of the building in which it was planned to install three cranes. Another reduction of 10 per cent, the third so far this year, has been announced in the price of the motors by leading manufacturers.

The Waugh Foundry & Machine Works, Box 667, Williamson, W. Va., recently organized with a capital of \$50,000, has awarded contract to the Truscon Steel Co., Youngstown, for a one-story foundry and machine shop, 50 x 150 ft. The company will specialize in the manufacture and repair of mining machinery. A list of equipment to be installed has been prepared. C. S. Waugh is president, and J. R. Hill, general manager.

Fire, July 9, destroyed the plant of the Janelow Products Co., Janelow, near Clarksburg, W. Va., manufacturer of wood products, with loss of about \$85,000, including machinery. L. J. Hittinger, Clarksburg, is head.

Mark H. Russell and M. T. Perseger, Williamson, W. Va., are organizing a company, capitalized at \$1,000,000, for the erection of an ice-manufacturing and cold storage plant.

The American Cotter Pin Co., Pittsburgh, has filed notice of dissolution under State laws.

The Replacement Auto Parts Co., Pittsburgh, is being organized by F. F. Hall, E. H. Lecrone and O. O. Schucker, to manufacture automobile parts and equipment. Application for a State charter will be made on July 25. John A. Metz, 707 B. F. Jones Law Building, represents the company.

The Universal Visible Calculator Co., Pittsburgh, has been incorporated with a capital of \$25,000 to manufacture calculating machines and parts. A. S. Dick, 632 Duquesne Way, is treasurer.

Fire, July 6, destroyed a portion of the works of Carl C. Miller & Co., 835 Penn Avenue, Wilkensburg, Pa., operating a brass finishing and plating plant.

The Brown Puncture-Proof Tube Co., Pittsburgh, has been incorporated with a capital of \$25,000 to manufacture automobile tubes and other rubber specialties. C. E. Johnson, 2112 Wightman Street, is treasurer.

A. J. List, Tyrone, Pa., has awarded contract to J. Van

Hildebrand, Tyrone, for a new two-story automobile service and repair works, on East Tenth Street, 60 x 100 ft., estimated to cost about \$55,000.

The Nitro Foundry Co., Nitro, W. Va., has been incorporated with a capital of \$50,000 by W. A. O'Neill, Ralph Matthews and M. S. Aldrich, to manufacture castings.

The Twelfth Street Garage, Wheeling, W. Va., has filed plans for a five-story and basement automobile service and garage building, with machine and repair department, 85 x 120 ft., at Twelfth and Main streets, to cost \$150,000. E. A. Baden is president.

Chicago

CHICAGO, July 18.

The market shows some improvement over last month in sales and inquiries. The H. W. Johns-Manville Co. has put out the following list covering repair shop equipment for its new Waukegan, Ill., plant:

- One 24-in. engine lathe.
- One 16-in. engine lathe.
- One 14-in. engine lathe.
- A No. 2 plain milling machine.
- An electric floor grinder.
- Plain cylindrical grinding machine.
- Universal grinding machine.
- Hack-saw.
- One 20-in. shaper.
- One 21-in. drill press.
- One 14-in. drill press.
- One 30-in. open side planer.
- Pipe machine.
- One 3½-ft. radial drill.
- One 4-ft. radial drill.

Local dealers are working on this list, but it is understood that purchases will be closed in New York. The Automatic Electric Co., Chicago, has bought the equipment listed in this column last week, for its Fort Dodge, Iowa, subsidiary, the Monarch Telephone Mfg. Corporation. The Acme X-Ray Co., Chicago, bought second-hand machines, principally, to fill its requirements, as enumerated last week. The Milwaukee Tank Works, Milwaukee, is inquiring for a 24-in. engine lathe and a No. 1½ milling machine. Lists of equipment for Federal vocational training schools at Jacksonville, Ill., and Valparaiso, Ind., are before the trade. The Jacksonville inquiry includes a universal milling machine, Brown & Sharpe No. 1-A, or equivalent; a 14-in. x 5-ft. engine lathe; 12-in. or 14-in. stroke shaper; 20-in. drill press; wet floor grinder, and a portable electric center grinder, ½-hp. with 2½-in. x 6-in. medium grade carborundum wheels. The Stephens-Adamson Mfg. Co., Aurora, Ill., is inquiring for a ¼-in. plate bending roll, ¾-in. stake riveter, ¼-in. circle shear and a 5-ft. brake for its Los Angeles, Cal., plant.

The Illinois Central and Rock Island lists are still unbought. The vice-president in charge of purchases for the latter road states that machine tool prices are still too high and no buying will be done until substantial reductions are made.

The Teeter Toy Mfg. Co., 1519 North Artesian Avenue, Chicago, has been organized with \$11,000 capital stock, to manufacture metal toys. The incorporators include J. S. Jenes, Herman Driehouse, N. P. Coerens, Frank Anderson, and Jacob J. Hank.

The G. A. Ball Bearing Mfg. Co., 3051 West Lake Street, Chicago, is taking bids through Burrett H. Stephens, engineer, 37 West Van Buren Street, on a one-story plant, West Lake Street and Albany Avenue, to cost \$65,000.

The New Owatonna Mfg. Co., manufacturer of drills, seeders, and ensilage cutters, is having plans drawn for works on West Fifth Street, Winona, Minn., to cost \$225,000, exclusive of equipment. It will include an office building, garage, machine shop, 160 x 220 ft.; foundry, 120 x 140 ft.; covered material storage, 80 x 100 ft., and possibly an additional warehouse, 100 x 120 ft. Frank D. Chase, Inc., Chicago, is architect and engineer.

The Mit-Sel Stamping Mfg. Co., 510 Jersey Street, Quincy, Ill., has been incorporated with a capital of \$50,000 by Edward H. Mitchell, Theodore Schell and William Spohr, Jr., to manufacture stamped metal products.

The Wheeling Corrugating Co., 2547 Arthington Street, Chicago, has taken bids for a one-story addition, 90 x 125 ft., estimated to cost about \$40,000. Paul Gerhardt, 64 West Randolph Street, is architect.

The Twin City Separator Works, 2830 Colfax Avenue, Minneapolis, Minn., manufacturer of grain-cleaning machinery, etc., has awarded contract to the Pike & Cook Co., 416 South Fifth Street, for a two-story addition, 62 x 148 ft., on Madison Street, N. W., estimated to cost about \$30,000. C. O. Paulson is secretary and treasurer.

The Utility Battery Co. of America, Mount Prospect, Ill., has been incorporated with a capital of \$5,000,000 under

Delaware laws to manufacture electric storage batteries and kindred equipment. The incorporators are T. C. Fredericks, M. Luce and H. L. Wuerffel, Mount Prospect. The company is represented by the Capital Trust Co., Dover, Del.

The Chicago & Northwestern Railroad, 399 West Jackson Boulevard, Chicago, has plans under way for a two-story ice-manufacturing plant at Clinton, Iowa, estimated to cost about \$50,000.

Schaffer Brothers, 2207 South Central Park Avenue, Chicago, manufacturers of metal products, have taken bids for a new one-story sheet metal-working shop, 50 x 140 ft. The Walter Engineering Co., 38 South Dearborn Street, is architect.

The American Accumulator Co., Owatonna, Minn., manufacturer of electric storage batteries, has awarded a contract to Hammel Brothers & Anderson, Owatonna, for a new one-story plant, 90 x 106 ft.

The Common Council, Corning, Iowa, has approved a bond issue of \$60,000 for the construction of a municipal electric light and power plant. W. C. Chubb is city clerk.

Detroit

DETROIT, July 18.

The Niles Fence Co., Niles, Mich., recently organized to manufacture wire fencing, has plans under way for the establishment of a factory with an initial daily output of about 15,000 ft. of material. M. Thompson is president.

The Ideal Pattern & Machine Co., Grand Rapids, Mich., has filed notice of dissolution under State laws.

The plant of the Below Sawmill Co., Marinette, Mich., was destroyed recently by fire with loss estimated at about \$90,000, including machinery. No announcement has as yet been made regarding the rebuilding of the works.

Fire, July 10, destroyed the forge shop, wood-working plant and a portion of the powerhouse and pumping plant at the works of the Bates Iron Mining Co., Iron River, Mich., with loss estimated at about \$30,000.

The Wabash Railroad, 144 South Clark Street, Chicago, has acquired about 65 acres near Detroit, to be used for the establishment of new shops, yards and other terminal buildings.

The Belmont Sand & Gravel Co., Fourth National Bank Building, Grand Rapids, Mich., recently organized, is planning for the immediate installation of equipment at its proposed new plant at Belmont, near Grand Rapids, to consist of crushing machinery, washing equipment, hoisting and conveying apparatus, etc., with power house, equipped with oil-engines. Maurice Sluyter is president, and I. R. Blandford, secretary.

Milwaukee

MILWAUKEE, July 18.

Inquiry for machine tools from the automotive industries has picked up to some extent the past week or 10 days, but thus far little actual business has been passing. Production of tools is now at a minimum, as makers and dealers have no difficulty in filling the majority of orders out of stock. Business is considered more active than in June, and while improvement is slow, confidence is expressed that the remaining months of 1921 will furnish a material increase over the first half.

Gray iron foundries report some improvement in demand, but steel foundries are operating at a decreased production schedule because of the lack of new orders.

Structural shops are kept fairly busy with a steady run of small jobs, principally in the nature of public garages, school buildings and public works. Sizable tonnage contracts are scarce.

The Sommers & Son Co., Chicago and Milwaukee, manufacturer of machinery and equipment for milk condensing plants, has broken ground for a new foundry and machine shop, 38 x 117 ft., one story, of brick and concrete, at Thirty-first and Burleigh streets, Milwaukee. It will be ready about Sept. 1, at which time the present leased quarters at 3022-3026 Galena Street will be abandoned. F. X. Sommers is vice-president and general manager at Milwaukee.

The Rogers Mfg. Corporation, Milwaukee, has been organized with an authorized capital stock of \$50,000 to manufacture carbureters and other auxiliary devices and appliances for gas engines, motor vehicles, etc. The incorporators are William A. Hyde, Bert Vanderveldt and Claude J. Hendricks, attorney, 1504 First Wisconsin National Bank Building.

The Riverview Foundry Co., Silver Lake, Wis., has been organized with a capital stock of \$10,000 to engage in the gray iron foundry business. The incorporators are Charles B. Bohen, R. C. Dixon and I. F. Dixon.

The Manitowoc Church Furniture Co., Waukesha, Wis., will build a power plant addition and a new stack and will install a 125-kw. generating unit. Charles F. Schuetze is general manager.

The Stewart-Galvin Co., Marshfield, Wis., has been incorporated with a capital stock of \$50,000 to manufacture storage batteries. It represents a merger of interests of the Stewart-Galvin Battery Co. and the Stewart Storage Battery Co. For the present production will be carried on in the major part of the Marshfield-Franklin Garage. Later a new factory will be erected. Amos Roll, A. C. Felker and R. R. Williams, all of Marshfield, represent local interests in the enterprise.

The Wisconsin Screw Co., Racine, Wis., recently increased its capitalization from \$30,000 to \$60,000 to accommodate the development of its business. It manufactures automatic screw machine products.

The Monarch Tractor Co., Watertown, Wis., which was bid in at bankruptcy sale for \$44,000 by E. B. Cadwell of New York, a principal creditor, has resumed operations on a limited scale, following the confirmation of the sale and transfer of the property to Mr. Cadwell. J. L. Hornbeck has been retained as works manager.

The Kinsey-Davidson Electric Welding Co., 208 Mayer Building, Milwaukee, has changed its style to the Davidson Electric Welding Co., following the purchase of the interest of John I. Kinsey by W. B. Davidson. Mr. Kinsey is engaging in another line of business.

The Filer & Stowell Co., Milwaukee, has started work on alterations, repairs and improvements in its foundry department, to cost about \$25,000.

The Green Bay Investment Corporation, Green Bay, Wis., has let the general contract to the Ludolf M. Hansen Co. for the erection of a four-story building, 100 x 200 ft., to be equipped as a cold storage warehouse. A large refrigerating unit and two electric elevators will be installed.

The Foster Construction Co., 413 Grand Avenue, Milwaukee, has taken the general contract to erect a new high, graded and vocational training school at Goodman, Marinette County, Wis. It will cost about \$120,000 complete.

The Gulf States

BIRMINGHAM, July 18.

The Stringer Brothers Foundry Co., 109 North Dearborn Street, Chicago, manufacturer of pipe, brass goods and other plumbing specialties, has begun the erection of a new branch plant at Gadsden, Ala., to include iron and brass foundry, assembling, finishing and other general works departments. It is proposed to commence production at the earliest possible date. A company to be known as the Stringer Brothers Co., capitalized at \$200,000 and chartered under Alabama laws, will operate the plant. Charles C. Stringer is president.

The Texas Oil Co. and the Gulf Refining Co., Meridian, Miss., are planning to rebuild their local plants, destroyed by fire, June 28, with loss estimated at \$150,000, including equipment. The adjoining plant of the Acme Planing Mill was also destroyed with loss of about \$35,000.

The Richard Carter Co., Gulfport, Miss., manufacturer of gasoline engines for automobiles, etc., is planning for enlargements and the installation of new equipment.

The F. H. Koretke Brass Mfg. Co., 922 Magazine Street, New Orleans, is planning the erection of a one-story addition to its foundry. E. W. Gosselin is vice-president and general manager.

The Frohlichs Marine Repair Works, New Orleans, is planning for the early operation of its new floating machine shop and marine repair works, now being completed at a cost estimated at close to \$250,000, including machinery. The plant has been established on a barge, 110 ft. long, with 26 ft. beam and 6 ft. draft.

The Gadsden Clay Products Co., Gadsden, Ala., has been incorporated with a capital of \$25,000, to manufacture building tile and kindred specialties. Robert Riley is president, and Gordon Hood, treasurer.

Electric motors, presses, transmission and other machinery will be installed in the new one-story plant, 100 x 100 ft., to be erected at Tampa, Fla., by the United Paper Co., Atlanta, Ga., for the manufacture of paper wrappers for fruit. The building contract has been let to E. W. Parker, Curry Building, Tampa. Louis Wellhouse is president.

The Grove Land & Timber Co., Asheville, N. C., is planning for the construction of a new electric light and power plant at St. Petersburg, Fla., in connection with the improvement of a large tract of land in this section. E. W. Grove is president.

The Cisco Clay & Coal Co., Cisco, Tex., has plans under

way for the erection of new works for the manufacture of brick, tile and kindred products. It will be constructed in units, and later a second section will be erected for the production of face brick, etc.

W. A. Rogers, Houston, Tex., has acquired the oil refinery of the Ryan & Fisher Refining & Production Co., Waco, Tex. The new owner plans for extensions and improvements in the plant, and will increase the capacity from 500 to over 1000 bbl. per day.

The H. & A. Wood Products Co., St. Petersburg, Fla., manufacturer of toys, is planning for enlargements in its factory to double the present capacity.

Indiana

INDIANAPOLIS, July 18.

About \$600,000 will be expended by the American Coating Mills Co., Elkhart, Ind., for the addition to its coated paper manufacturing plant at the foot of Division Street. It will be three stories, 50 x 150 ft., and 50 x 50 ft. Construction will begin at once. C. C. Colbert is president and treasurer.

The Rockport Planing Mill Co., Rockport, Ind., is arranging to rebuild its plant, destroyed by fire, July 9. Charles Wilbern is president.

The M. G. Miller Mfg. Co., Columbia City, Ind., has been chartered under State laws to manufacture refrigerators and similar equipment. The incorporators are M. G. Miller, Lloyd Crouch and A. J. Freed, Columbia City.

A new power house will be erected at the Wiley High School, Terre Haute, Ind., by the Board of Education, in connection with general remodeling and improvement of the structure, estimated to cost about \$120,000. Bids will be asked at once. Miller, Johnson & Miller, 105 South Seventh Street, are architects.

The Standard Oil Co. of Indiana, Indianapolis, is planning to rebuild its refinery at Whiting, Ind., destroyed by fire, July 5, with loss estimated at close to \$2,000,000.

The Central South

ST. LOUIS, July 18.

Very little machine tool business is being transacted in this section. Railroads are not sending out any inquiries, and automobile plants are running on small capacity.

The Kaw Boiler Works, Kansas City, Kan., bought a 5-ton crane through a manufacturer's representative in St. Louis.

The N. O. Nelson Mfg. Co., 928 Chestnut Street, St. Louis, manufacturer of sanitary ware, plumbing fixtures, etc., is completing plans for extensions and improvements in its plant at Noblesville, Ind., to cost about \$50,000.

The Western Tractor Co., Joplin, Mo., has completed negotiations with the Chamber of Commerce, Wichita, Kan., for the acquisition of local site for the erection of a new plant to manufacture farm tractors and parts. The present works, representing an investment of close to \$500,000, will be removed to the new location.

The Lock Joint Pipe Co., Webb City, Mo., is planning for the erection of a new works for the manufacture of reinforced cement pipe, estimated to cost about \$125,000 with machinery. The Missouri Pacific Railroad Co. at this place is interested in the project.

The American Washing Machine Co., Muskogee, Okla., has been incorporated with a capital of \$25,000 by J. M. Sims, W. F. Bickford and E. V. Vernor, Muskogee, to manufacture electrically operated washing machines and parts.

The Chickasha Auto Top Co., Chickasha, Okla., operating an automobile top and equipment manufacturing plant at 114 Kansas Avenue, has preliminary plans under way for the establishment of new works as an extension to the present factory.

The Prewitt Shock Absorber Co., Bolivar, Tenn., has been incorporated with a capital of \$25,000 by M. L. Prewitt, A. C. Osborne and W. S. Pollis, Bolivar, to manufacture automobile shock absorbers and other kindred equipment.

The Usona Mfg. Co., 826 South Eighteenth Street, St. Louis, manufacturer of electrical specialties, has awarded a contract to the Kremer & Voiril Construction Co., Century Building, for its new one and two-story plant, 100 x 150 ft., at Chateau and Spring streets. F. C. Long is president.

The Magnolia Petroleum Co., Duncan, Okla., has awarded a contract to the Austin Co., Euclid Avenue, Cleveland, for three new one-story buildings, 40 x 260 ft., 40 x 40 ft., and 25 x 65 ft., estimated to cost \$50,000.

The Battery Service Co., Muskogee, Okla., manufacturer

of storage batteries and equipment, is planning for the erection of a new one-story factory, 110 x 170 ft. J. H. Schmidt is president and manager.

The Motor Oil & Refining Co., Chickasha, Okla., recently organized, is perfecting plans for the construction of a new refinery with daily initial capacity of about 5000 bbl., and estimated to cost close to \$300,000 with machinery. R. C. Parks is general manager.

The Marland Refining Co., Ponca City, Okla., has acquired property in St. Charles Parish, near New Orleans, for a new refinery and general oil terminal plant. It is said that the proposed works will cost in excess of \$1,000,000 with equipment.

The Missouri Public Utilities Co., St. Louis, is planning for the rebuilding of its power plant at Sikeston, Mo., recently destroyed by fire.

A new two-story plant to cost about \$50,000 with machinery will be constructed by the Central West Grease Co., 212 North Fifth Street, St. Joseph, Mo. Preliminary plans are under way. A. B. Snoddy is president.

The Cooper Battery Co., Jackson, Tenn., is planning to rebuild its plant recently destroyed by fire. R. L. Beare is head.

The Twin Pin Clothesline Co., Charlotte, N. C., has been organized to manufacture wire clothes pins and similar products. It is headed by D. S. and W. J. Boyles, Charlotte.

The Sash Weight Foundry Co., Sand Springs, Okla., has been chartered under State laws to manufacture sash weights and other iron castings. The incorporators are L. C. Hinds, A. C. Spitznagel and E. M. Tyler.

California

SAN FRANCISCO, July 12.

The most conspicuous business of recent date was the sale of about 20 machine tools, including lathes, drills and grinders, to the San Joaquin Power & Light Corporation, Fresno, Cal., which supplies power for the entire San Joaquin Valley. While the consideration involved has not been made public, it is said to run into five figures. There has been a fair business in some machine lines, notably in mining and automobile equipment, but the general situation does not present a very encouraging aspect.

Samuel Kraemer, Placentia, Cal., has filed plans for a new one-story machine shop, 40 x 130 ft.

The Pacific Platinum Works, Glendale, Cal., has been incorporated with a capital of \$20,000 by A. S. Hoyt and A. M. Draper, to manufacture metal products.

The Pacific Clay Products Co., American Bank Building, Los Angeles, is completing plans for its new plant at Los Nietos, Cal., for the manufacture of firebrick and other refractory products. It will replace the plant recently destroyed by fire and will have an initial daily output of about 25,000 firebrick.

The Interlocking Tile & Sewer Pipe Co., Indio, Cal., has been incorporated with a capital of \$250,000 to manufacture tile, brick, sewer pipe and kindred products. J. A. Gordon is president; J. P. McNally, secretary, and J. W. Wilson, treasurer.

The Electric Utensils Co., 1405 South Hill Street, Los Angeles, has filed notice of organization to manufacture electrical specialties. Kenneth H. Woolson, 910 Third Street, heads the company.

The National Cornice Works, 1323 Channing Street, Los Angeles, manufacturer of metal products, has filed plans for extensions and improvements in its plant.

Bagley & Co., 901 Nineteenth Avenue, Oakland, Cal., operating a boat repair plant, have plans for a one-story shop addition, for general repair work.

Fire, July 5, destroyed the power house, operating plant and mechanical buildings of the Sultana Mining Co., Angels Camp, Cal., with loss estimated at about \$100,000, including machinery.

The Consolidated Wagon & Machine Co., West Third Street, Salt Lake City, Utah, is planning to rebuild the portion of its works destroyed by fire, July 2, with loss estimated at \$75,000.

The Utah Refining Co., Salt Lake City, Utah, is adjusting the insurance on its oil refinery, recently destroyed by fire, with loss estimated in excess of \$300,000, and has plans under way for rebuilding.

Canada

TORONTO, July 18.

The machine tool market in this section has been exceptionally quiet the past week. Very few manufacturing con-

cerns in Ontario or Quebec are operating above 50 per cent capacity and the majority are running between 10 and 15 per cent. Very little is being done in the way of new construction, which is at a lower point than for a number of years. There is, however, a small demand for certain lines of wood-working tools. Small tools continue in fair demand, but users are not stocking up, being content to buy as needed. No further softening in prices has been announced.

H. E. Montgomery, town clerk, Timmins, Ont., is receiving bids for a direct connected motor-driven blower and electrical fittings for a sewage disposal plant.

The town of Daysland, Alta., is contemplating spending \$14,000 on an electric light plant and equipment.

Cle Electricite, St. Prime, Que., is erecting a power house at a cost of \$40,000.

Menary & Wetherill, Wetaskiwin, Alta., have purchased the Wetaskiwin Welding Works and have opened a machine shop. They are asking for catalogs, lathes, etc.

The Rapid Electric Co., Ltd., Sault Ste. Marie, Ont., has been incorporated with a capital stock of \$40,000 by Charles T. Toombs, George L. Wilson, Arthur P. Crawford and others to manufacture electrical machinery, tools, etc.

The H. W. Steel Shank & Specialty Co., Ltd., Preston, Ont., has been incorporated with a capital stock of \$50,000 by Samuel H. Parker, Henry W. Steel and others to manufacture metal and wood products, etc.

The Auto Signal Light Co., Ltd., Leamington, Ont., has been incorporated with a capital stock of \$50,000 by Robert Fairful, Robert D. Sloane, George A. Brown and others to manufacture automobile signal lights, accessories, etc.

The ratepayers of Thorold, Ont., carried a by-law giving a fixed assessment of \$20,000 to the Gove Motor Car Co., Detroit, which will establish a plant. It has secured an option on a 5-acre site and construction work will soon begin.

Plans of New Companies

Henry Althof's Sons Co., 121 East Twenty-third Street, Erie, Pa., which was recently incorporated under the laws of Pennsylvania, was formerly conducted as a co-partnership. There is no change in the personnel, the former co-partners being the sole owners of the corporation. The officers are as follows: George T. Althof, president; Henry A. Althof, vice-president; Edward W. Althof, secretary and treasurer. The business has been established for more than half a century, and three generations of the Althof family have been interested in it within that period. It was conducted for many years under the name of the Erie City Iron Fence & Wire Works but for the past few years has been conducted as Henry Althof's Sons. The company is not contemplating the purchase of any new equipment at this time.

The Dawn Mfg. Co., 552 Fairfield Avenue, Bridgeport, Conn., manufacturer of washing machines, which was recently incorporated, may be in the market within a month or two for lathes and drills.

The Decker Mfg. Co., 251 Elm Street, Newark, N. J., recently incorporated, will manufacture blow torches and kindred products. The company advises that it is not in the market for new equipment.

The Martin Automatic Fishing Reel Co., Mohawk, N. Y., has been incorporated recently, though the business was established some years ago. No additions to the plant or equipment are contemplated at this time.

The Detroit Alloy Steel Co., 1436 Lafayette Boulevard, Detroit, Mich., which was recently organized for the purpose of making tool steel, reclaiming Stellite and making centers for milling machines and lathes, will specialize on the latter work. The company claims that it will make a center that will give service at ratio of 10 to 1.

The Metal-Craft Mfg. Co., 64 West Randolph Street, Chicago, recently incorporated, manufactures metal office furniture and all kinds of sheet metal fixtures and equipment for factories and shops, such as bins, shelving, cabinets, benches, tool stands and racks, machine guards, boxes, barrels and lathe pans; also stampings, dies and jigs. An illustrated pamphlet describing the Metal-Craft special sanitary locker and the complete line of office furniture will be mailed on request.

The Sani Products Co., Ltd., Toronto, has been incorporated with a capital stock of \$40,000 by John S. Duggan, 114 Kendal Avenue; Willis B. Sturup, 6 Adelaide Street East; Thomas S. H. Giles and others to manufacture metal and wood products.

The Canuck Tool Mfg. Co., Ltd., Toronto, has been incorporated with a capital stock of \$40,000 by Sumner W. Graham, 62 Richmond Street West; Percy C. Innes, Frederick E. Claxton and others to manufacture tools, implements, machinery, etc.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

Iron and Soft Steel Bars and Shapes

Bars:	Per Lb.
Refined bars, base price.....	2.93c.
Swedish bars, base price.....	12.00c.
Soft steel bars, base price.....	2.93c.
Hoops, base price.....	4.03c.
Bands, base price.....	3.63c.
Beams and channels, angles and tees	
3 in. x ¼ in. and larger, base.....	3.03c.
Channels, angles and tees under 3 in. x	
¼ in., base.....	2.93c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger.....	2.93c.
(Smooth finish, 1 to 2½ x ¼ in. and larger) ..	3.13c.
Toe calk, ½ x ¾ in. and larger.....	3.60c.
Cold-rolled strip, soft and quarter hard.....	10.00c. to 10.50c.
Open-hearth spring steel.....	4.25c. to 8.00c.
Shafting and Screw Stock:	
Rounds.....	4.38c. to 4.63c.
Squares, flats and hex.....	4.98c. to 5.13c.
Standard cast steel, base price.....	14.00c.
Extra cast steel.....	17.00c.
Special cast steel.....	22.00c.

Tank Plates—Steel

¼ in. and heavier.....	3.03c.
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Sheets

Blue Annealed

	Per Lb.
No. 10.....	3.68c.
No. 12.....	3.73c.
No. 14.....	3.78c.
No. 16.....	3.88c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20.....	4.30c.	.....
Nos. 22 and 24.....	4.35c.	5.60c.
No. 26.....	4.40c.	5.65c.
No. 28.....	4.50c.	5.75c.
No. 30.....	4.75c.	.....

No. 28, 36 in. wide, 10c. higher.

Galvanized

	Per Lb.
No. 14.....	4.50c.
No. 16.....	4.75c.
Nos. 18 and 20.....	4.90c.
Nos. 22 and 24.....	5.05c.
No. 26.....	5.20c.
No. 27.....	5.35c.
No. 28.....	5.50c.
No. 30.....	6.00c.

No. 28, 36 in. wide, 20c. higher.

Welded Pipe

Standard Steel

	Blk.	Galv.
½ in. Butt... —46	—30	
¾ in. Butt... —52	—37	
1-3 in. Butt... —54	—40	
3½-6 in. Lap... —49	—35	
7-12 in. Lap... —40	—24	

Wrought Iron

	Blk.	Galv.
¾ in. Butt... —18	List	
1-1½ in. Butt... —20	—2	
2 in. Lap... —14	+ 3	
2½-6 in. Lap... —18	—2	
7-12 in. Lap... —7	+10	

Steel Wire

	Per Lb.
Bright basic.....	4.50c.
Annealed soft.....	4.50c.
Galvanized annealed.....	5.25c.
Coppered basic.....	5.00c.
Tinned soft Bessemer.....	6.50c.

*Regular extras for lighter gages.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Metal Markets."

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet.....	15¼c. to 18¼c.
High brass wire.....	16¼c. to 21¼c.
Brass rod.....	13¼c. to 20¼c.
Brass tube, brazed.....	27 c. to 31 c.
Brass tube, seamless.....	19 c. to 20 c.
Copper tube, seamless.....	22¼c. to 23 c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 21¼c. to 23¼c. per lb. base.

Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

Tin Plates

Bright Tin	Grade	Grade	Coke—14x20	Primes	Wasters
	"AAA"	"A"			
	Charcoal	Charcoal			
	14x20	14x20			
IC..	\$10.60	\$9.50	80 lb....	\$6.80	\$6.55
IX..	11.80	10.75	90 lb....	6.90	6.65
IXX..	13.60	12.25	100 lb....	7.00	6.75
IXXX..	15.60	14.25	IC...	7.20	6.95
IXXXX..	17.20	16.00	IX...	8.10	7.85
			IXX...	9.10	8.85
			IXXX...	10.50	10.25
			IXXXX...	11.50	11.25

Terne Plates

8-lb. Coating 14 x 20

100 lb.	\$7.50
IC	7.75
IX	8.00
Fire door stock	11.00

Tin

Straits pig	31c.
Bar	38c. to 40c.

Copper

Lake ingot	16c.
Electrolytic	16c.
Casting	16c.

Spelter and Sheet Zinc

Western spelter	6¼c. to 6½c.
Sheet zinc, No. 9 base, casks	11½c. open 12c.

Lead and Solder*

American pig lead	5½c.
Bar lead	6¼c. to 6½c.
Solder, ½ and ½ guaranteed.....	24c.
No. 1 solder	21c.
Refined solder	18c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.....	80c.
Commercial grade, per lb.....	40c.
Grade D, per lb.....	35c.

Antimony

Asiatic	6¼c. to 7c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb....30c. to 33c.

Old Metals

Business is very quiet and values remain stationary. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	10.00
Copper, heavy and wire	9.25
Copper, light and bottoms.....	8.00
Brass, heavy	4.75
Brass, light	4.00
Heavy machine composition.....	8.50
No. 1 yellow brass turnings.....	4.25
No. 1 red brass or composition turnings.....	6.50
Lead, heavy	3.50
Lead, tea	2.25
Zinc	2.50

